Water Policy Manual

Shakopee Public Utilities

Adopted by:
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SHAKOPEE PUBLIC UTILITIES

WATER POLICY MANUAL

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I. CUSTOMER USE REQUIREMENTS AND POLICIES

A. General

1. Purpose

The customer use requirements and policies of Shakopee Public Utilities (SPU) are detailed in the document. The purpose of these policies is to ensure that the water consumed by humans is potable, adequately treated, and free from contaminants within the standards set forth by the Minnesota Department of Health, and to ensure a fair and equitable sharing of the cost of the municipal water system. This document is a statement of SPU's policies as of the date of adoption by the SPU Commission (Commission); it does not limit the Commission to set future rules and regulations concerning the water system.

The Commission has appointed the General Manager to act as their representative in applying and in the delegation of the policies outlined in this Water Policy Manual (WP Manual)

2. Water Main and Service Line Specifications

Please see Chapter III of this WP Manual.

3. State Plumbing Code

The most current Minnesota State Plumbing Code is adopted as a part of this WP Manual by reference. When the provisions of the MN State Plumbing Code and the WP Manual are not identical, the stricter of the two shall apply.

4. Connection to Municipal System Requirements

Within three (3) years of municipal water service becoming available to any lot, place, or parcel of land for which a building permit is issued with water-consuming plumbing or facilities, and the water is intended to be used for domestic purposes or human consumption, connection to the municipal water system must occur.

5. Permits to Connect to System Required

Any person making a connection to the SPU municipal water system must comply with the regulatory provisions detailed in this manual. No Person shall use, construct, or install any water service connection outside these provisions.

6. Permitting Use by Others

Municipal water is intended for use by the customers on their own premises. Use by others for any other purpose requires written permission from SPU.

7. Private Well Prohibition (City of Shakopee Municipal Code 130.21)

A. Definitions

a.1 Domestic use means water that is used for drinking or potable water or irrigation purposes, but shall not include water from wells drilled for purposes such as dewatering, groundwater monitoring, heating, or cooling, elevator boring or environmental bore holes.

a.2 Irrigate means to supply land with water by any artificial means, as by diverting streams, flooding, or spraying, to moisten or wet.

a.3 Private Well for Domestic Use means any well not owned by the SPU that is drilled for potable water, non-potable water or irrigation purposes including sand point or drive point wells. "Private Wells for Domestic use" shall not include wells drilled for such purposes as dewatering ground water monitoring, heating, or cooling, elevator boring or environmental bore holes.

a.4 Sand point or drive point wells means a shallow well that is a 1-1/4 to 2-inch steel casing constructed by driving or pounding the casing down into the ground until an aquifer is encountered.

B. Prohibition. No Private Well for Domestic use may be drilled or otherwise constructed on or after January 1, 2020, or any property where SPU municipal water service is available within 1,000 feet unless the City or SPU has previously entered into an agreement with the property owner allowing for the drilling or construction of a Private Well for Domestic Use.

8. Water Availability

Availability of water services is contingent upon the payment of the Water Capacity Charge, Equivalent Lateral Watermain Charge (if applicable) and Trunk Water Charge for the property seeking service. The municipal water main must extend past the property applying, and the installation must meet current water main specifications and design criteria. Water shall not be considered "available" until SPU approves and accepts the entire water system for the plat or parcel.

9. Request for Water Services

A. Documentation for water service must be submitted to SPU's Planning and Engineering department. This documentation must contain the name of the owner; a description of the property, lot, block, and addition; the name of the street upon which the property fronts; the official street number assigned to the premises as shown by the records of the city; and the signature of the applicant agreeing to conform to the rules and the regulations established by the SPU Commission as conditions for the use of water.

B. Industrial and commercial installations shall also furnish information regarding planned hourly usage, flow rates, layout of water system on owner's property, and other pertinent information required by SPU. Required fire protection is determined by the City of Shakopee Fire Marshal.

10. Request for Water Service – Fees and Deposit

All applications for service installation shall be made by the owner of the property to be served, or by an authorized agent, and shall state the size of service connection required. The applicant will need to pay the Water Capacity Charge (WCC) and a meter fee required for the installation as indicated in the chapter, as well as the trunk water charge (TWC) due in accordance with SPU Commission resolution, if it has not been previously paid on said property. Fee information, Terms and Conditions, and Agreements for new services installation can be found at ShakopeeUtilities.com/Business/Getting Started-Fees/Policy Manuals/Agreements.

When service connections have been installed, *application for water service* may be made either by the owner or a duly authorized agent, or by the tenant or occupant of the premises, via the Application for Service located online at shakopeeutilities.com/business or residential. Service connection rights shall run with the property on which it is located.

11. Application for Temporary Service for Building

Where a water service line has been installed to a new building under construction, temporary water supply may be taken for construction use only upon application for permit with SPU; installation of temporary meter with backflow provisions; and upon payment of the fee set for such service, provided the length of time this service shall be permitted is no more than six (6) months. The service line shall be hydrostatically tested, flushed, and meet the bacteriological sampling requirements before a temporary water meter shall be issued.

12. Tapping and Costs

Connection to the SPU water system shall require a permit from SPU. No tap of any distribution main or pipe of the municipal water supply system shall be made unless approved by SPU. Contractor must have permit on site with the SPU signed print.

Taps shall be made on the same side of the water main as the property to be served and shall lie directly in front of that property perpendicular to the property line. All taps made by the contractor shall be at least 3 feet from the bell end of the water main and at least 3 feet from another service on the same side of the pipe. It is required to have a poured concrete kicker behind the tap and the tap itself, and valve bolts shall be covered in plastic before the concrete is poured. Some type of thrust kicker must be installed. Additionally, the water main must have a copper conductivity strap to the new service bypassing the wet tap valve.

13. Operating Valves

No person other than SPU personnel shall operate any valve on the municipal water system, except valves on residential service lines and lawn irrigation service lines as described in Section 14. SPU may operate any privately owned valve that is connected to the public water system in the event of an emergency or any other situation that is deemed necessary.

14. Turning Customers' Water On or Off

The customer is responsible for keeping the service line valve in operable condition, including the curb stop valve, standpipe, cap, and protective cover or gate valve, gate valve box, and cover.

SPU personnel may assist homeowners in locating and operating curb stop valves in situations where repairs are needed. If the customer is requesting SPU to operate their curb stop, the homeowner shall be responsible for any issues that result in the operation of the curb stop valve. A shutoff/turn on fee for operating the curb stop valve may be billed to the homeowner for this service.

15. Deficiency in Supply of Water and Shutting Off Water

Neither the City of Shakopee, SPU or Commission is liable for any deficiency or failure in the supply of water to consumers. In case of fire, or alarm of fire, water may be shut off to ensure a supply for firefighting. In making repairs or construction of new works, water may be shut off at any time and kept shut off so long as necessary.

16. Restricted Use of Water Supply – Water Shortage Event

The Commission has adopted a Conservation and Energy Management plan to guide restrictions on use of the municipal water supply.

Whenever the Commission determine that a shortage of water threatens the city, it may by resolution, limit the times and hours during which water may be used from the municipal water supply system for lawn and garden sprinkling, irrigation, car washing, or other uses specified therein. Said resolution shall state the date upon which the restrictions shall become effective and shall be made public through whatever means of communication the Commission deems appropriate and reasonable.

Twenty-Four (24) hours after said resolution becomes effective, any water customer who shall cause or permit water to be used in violation of the provisions of said resolution shall be deemed in violation of this plan and is subject to a fine or penalty, including water service interruption.

In the event the Commission is unable to convene within a reasonable time, the authority to restrict use of water from the municipal water supply system shall be delegated to the General Manager.

17. Outdoor Water Use Restrictions – Annual Conservation Program

To conserve water and adhere to MN Department of Natural Resources requirements, SPU has restrictions on outdoor water use, which are in effect annually from May 1 through September 30 for all SPU water customers. SPU customers shall follow an odd/even lawn watering schedule. This restriction also prohibits all outdoor water use from noon to 5 p.m. on all days.

Hand watering is the exception to this policy and is permitted outside the hours of noon and 5 p.m. on all days.

Outdoor water use includes, but is not limited to, the use of all automatic irrigation systems or any appliance used for the purpose of watering lawns, landscaping, trees, or shrubs

- Customers whose street address is an odd number may water only on odd-numbered dates of the month.
- Customers whose street address is an even number may water only on even-numbered dates of the month.
- Restrictions may be relaxed for new sod, seed, or plantings. Please contact SPU via email for consideration and approval – water@shakopeeutilities.com
- **All outdoor water use is prohibited between noon and 5 p.m. on all days; no exceptions will be given for this restriction.**

Customers shall receive up to two warnings if in violation of this policy. A charge of $50 per subsequent violation will be assessed.

18. Water Tap Timelines

Tap connections must adhere to time guidelines. If, for any cause, the contractor making the tap should fail to have the tap started at the time specified in the application, the tap connection is canceled, and a new request to SPU must be made with a two (business) day lead time. The tap must be made as specified in the water main and service line specifications contained in the manual and must be observed by SPU personnel.

19. Auxiliary Water Supplies

No water pipe of the municipal water supply system shall be connected to any pump, well or tank that is connected to another water supply source. When such connections are found, the owner shall be notified to disconnect the water supply, and if not done immediately, the municipal water supply may be turned off. Before any new connection to the municipal system is permitted, SPU shall ascertain that no cross connections will exist when the new connection is made.

20. Private Wells

Private wells may not be maintained and continued in use after connection is made to the municipal water system without specific written authorization by SPU. This authorization is not transferable with the property ownership. A testable double check valve is required adjacent to and downstream of the meter for residential applications. An RPZ type valve is required for commercial and industrial applications.

21. Supply From One Service

No more than one house or building shall be supplied from one service connection unless approved in writing by the General Manager. Whenever two (2) or more buildings are supplied

from one (1) pipe connecting with the distribution main, each building or part of a building must have a separate curb stop box and a separate water meter. A written agreement regarding joint responsibility for maintenance of the common service shall be provided to SPU by the affected parties.

22. Repair of Water Leaks

It shall be the responsibility of the customer or property owner to maintain the water service line (pipe) **from the point of connection to the water main into the house or building.** In the event of a water service leak, the property owner or occupant of the premises will be given written notice and will have seventy-two (72) hours in which to repair the leak. Failure to repair the service line leak within seventy-two (72) hours will result in the water service line being shut off. The water will not be turned on until the service reinstatement fee and all other costs incurred by SPU in shutting off the water and/or repairing the leak have been paid. When the waste of the water is great, or when damage is likely to result from the leak, the repair must commence immediately upon receipt of written notice or water will be turned off in less than twenty-four (24) hours.

23. Request to Change Service Line

No new connections to the main lines shall be made until all existing service line and appurtenances have been removed, and the main plugged and inspected by SPU personnel. Refer to details WAT-020 and WAT-021. The water capacity charge will apply in the case of an increase in water use, or increased SAC determination.

24. Abandoned Services

All service installations connected to the water system that have been permanently abandoned, have not been used for three (3) years, or for any reason have become useless for further service, shall be disconnected at the main, at the property owner's expense. In the event the property owner neglects or refuses to disconnect such service, SPU may remove the service installation and bill the actual cost of the removal to the property owner. Refer to details WAT-020 and WAT-021.

Should the road authority not allow a street cut to remove the water service at the main, the property owner may request to enter into an agreement with and for SPU to properly abandon the service at the main at a future date. The cost to do so is the property owner's responsibility. The estimated cost is subject to approval by SPU's General Manager.

25. Use of Fire Hydrants

A. No person shall operate SPU-owned Fire hydrants or interfere in any manner with the municipal water system. Private fire hydrants may be operated by non-SPU personnel for the purpose of conducting the annual hydrant inspection.

B. Contractors or others wishing to obtain water from a hydrant for construction or temporary purposes should apply online at www.shakopeeutilities.com. The desired type and location of the hydrant(s) must be included in the application. Each hydrant used will be metered, and

this meter will be locked on the hydrant with a backflow device. Hydrant Meter Rentals terms and charges are available on website and at SPU.

C. Fire hydrants may not be used for purposes such as a potable water source, supplying irrigation systems, filling of pools, or flooding of ice rinks.

26. Double-Check Detector Fire Protection Backflow Prevention Assembly

A. A double-check detector backflow prevention assembly is required, including a 5/8" x 3/4" water meter which can be purchased from SPU inventory or supplied by the contractor. The meter must register in Gallons used and be installed on fire services that do not contain chemical additives.

B. To provide meter operation upon any water use through that service, the assembly shall be:
- Hydraulically balanced and installed in a horizontal position
- Include a testable double-check valve assembly immediately downstream of the meter.

C. If water is used through a fire connection for any purpose other than extinguishing a fire upon the premises, the property owner and occupant will be notified to cease usage. If improper usage is not corrected within seventy two (72) hours, the water will be shut off until proper adjustments are made.

* Refer to the SPU Cross-Connection Policy and Backflow Prevention Program for more details.

27. Fire Service Inspection

SPU reserves the right to perform inspections of fire service connections with piping, isolation valves, backflow prevention, and other attached appurtenances, and requires permitted access to the premises for such inspection during reasonable hours.

28. Private Hydrants, including Inspection

A. Definitions.

a.1 Private Fire Hydrant – a fire hydrant that is not located on public water main but is supplied with water from the municipal water system. This includes any fire hydrant that is downstream of the connection to the public water main (tee or wet tap) for the purpose of domestic service, combined fire and domestic service, dedicated fire service, or private fire protection mains or loops.

B. Private fire hydrants shall be indicated as such on any submitted plan; it must have a green top with a white front cap and yellow barrel

C. Private Fire hydrants shall meet the requirements of Chapter III section

D. Inspections

d.1 If requested by the property owner, SPU will inspect fire hydrants on private water service lines.
d.2 A hydrant inspection fee will be charged per inspection per hydrant.
d.3 The amount of the fee shall be as listed in the schedule of Fees and Charges that are reviewed and adopted annually by the Commission.
d.4 If repairs are needed following an inspection, SPU will notify the owner and the Shakopee Fire Department, indicating the required repairs.

29. Assessment Procedures

SPU will direct questions related to the status of property assessment for water main or ancillary facilities (for which service is proposed) to the City of Shakopee.

No permit shall be issued to tap or connect with any municipal water main, either directly or indirectly, from any lot or tract of land, unless it is certified that all water charges and/or assessments have been paid, or provisions are in place to ensure pending payments are made.

30. Service Lines

Service lines are owned and maintained by the property owner from the point of connection to the municipal water main, including all fittings on the water main that are necessary for that connection. Services up to and including one and one-half inches (1 ½") in diameter shall be Type K copper tubing, from the corporation top to the curb stop. Type K copper tubing or approved HDPE (1" or 1 ½" only) tubing shall be installed from the curb stop to the connection at the meter, with copper or brass fittings through the meter and backflow preventer if required. All services over one and one-half inches (1 ½") in diameter shall be ductile iron through the meter and backflow preventer. HDPE service lines shall require tracer wire per water detail WAT-027. Sprinkled townhouse services shall be 1 ½" services

31. Discontinuation of Service for Violation of Article

A. Water Service may be shut off at any curb stop valve or disconnected for reasons including, but not limited to, the following:

a.1 The owner or occupants of the premises served, or any person working on any pipes or equipment that relate to the water supply system, has intentionally violated, or threatens to violate any of the requirements of this policy related to the municipal water supply system.
a.2 The SPU General Manager determines there is a potential threat to the quality or reliability of the municipal water supply system.
a.3 Outstanding payments for water, service, meter(s), or any other charges by the present or former property owner or occupant.
a.4 Fraud or misrepresentation by the property owner or occupant in connection with an application for service.

B. A potential or existing cross connection shall constitute a threat or potential threat to the quality of the municipal water system and shall be subject to discontinuance of service.

C. A Shut-off fee will be charged for services that are shut-off or disconnected.

A. **Meters**

1. Water to be Metered

Except for extinguishing fire, all water used from SPU's municipal water supply system must be metered. This meter must be an SPU-owned meter. No person, unless authorized by SPU shall connect, disconnect, interfere with, or alter the meter.

2. Meters Property of SPU

All water meters are the property of SPU. SPU may remove, replace, or change size or type when deemed necessary.

3. Installation

All water meters are installed in accordance with the provisions of the SPU Design and Construction Standards, and in accordance with all rules in this section. Meter size is to be determined by SPU based on the maximum gallons per minute demand.

Water meters shall be installed so there is no more than 18" – 24" of exposed pipe from the finished floor to the stop valve upstream of the meter. Existing water meters are to be brought into conformance with current requirements at the time modifications are made to any part of the water supply plumbing systems affecting those meter installations.

4. Maintenance

SPU will maintain, repair, or replace all meters when rendered unserviceable through ordinary wear and tear and will replace them if necessary. SPU reserves the right to periodically have calibration procedures done in place on water meters over 1" in size. Water service may be shut down during this procedure.

Where replacements, repairs, or adjustments of any meter are rendered necessary by the act, neglect, or carelessness of the property owner or occupant of any premises, any expense incurred by SPU shall be charged to the water customer. Water service may be discontinued until the cause is corrected and the amount charged has been paid.

5. Testing

A. When a customer makes an inquiry regarding prior usage and associated charges, SPU will reread the meter in question. A customer may also make a written request to have the meter tested following the meter reread if concerns still exist. If test results indicate an error of over 5 percent (5%) of the water consumed, a new meter will be installed, and the bill will be adjusted accordingly.

B. One meter test is allowed in a twelve-month period. Additional test requests within the same twelve-month period will require a payment from the customer equivalent to the meter fixed fees (1" or smaller) or actual costs (meters 1 ½" or greater).

Three-fourths' inch (3/4") meters	Fixed Fee
One-inch (1") meters	Fixed Fee
One and one-half inch (1 ½") meters and over	Actual Costs

6. Reading and Inspection

During reasonable hours during the business day, SPU water personnel shall have permitted access to every building and premises connected with the municipal water supply system for purposes of reading, maintaining, changing meters and performing Backflow Assembly inspections.

C. **Rates and Charges**

1. Basic Rates

Customer water rates are determined by service type and are set by SPU's Commission on an annual basis. Current SPU water rates can be found on our website: www.shakopeeutilities.com

2. Water Usage Charges

Each water customer connected to the SPU water supply system will be charged a monthly fixed service charge and a usage charge for water used. Water used is metered and billed in 1,000-gallon increments monthly.

D. **Water Connection Policy**

The Water Connection Policy was established by Resolution #261 of the Shakopee Public Utilities Commission on September 12, 1983, for the purpose of creating a Water Availability Fund. This fund is used for siting and constructing new wells, pump houses, booster stations, water storage tanks, treatment plants, and transmission mains to support customer needs. The Water Availability Fund accumulates funds by a one-time, upfront Water Capacity Charge (WCC) that is collected when either a new building permit is issued or when increased water usage is anticipated by a building expansion or change in use.

A. The WCC is paid by property owners or developers, not ratepayers.

B. The anticipated water usage used in the calculations of the WCC fee is measured in equivalent SAC (Sewer Availity Charge) units. SAC units are determined by the Met Council. Currently, one SAC unit is defined as 274 gallons per day.

E. **Trunk Water Policy**

The Trunk Water Policy was established by Resolution #222 of the Shakopee Public Utilities Commission on February 2, 1981, for the purpose of creating a Water Availability Fund. The Water Availability Fund accumulates funds collected by Trunk Water Charges (TWC). Water Availability Fund shall be used to pay costs incurred by the construction of trunk facilities and oversizing pipes to provide adequate fire flow protection when water is made available to property within the City. Oversizing is increasing the size of pipes above and beyond the size required to meet lateral water main size/flow requirements. (See.F.4. Trunk Water Costs).

F. **Trunk Water Service Area**

A. New Service Area

a.1. When new water service is made available by SPU, a Trunk Water Charge (TWC) will be charged to the developer or landowner. If the TWC is not levied, a fee equivalent to a TWC, in addition to all other connection fees, is to be paid within thirty (30) days of the date said water service becomes available.

a.2. At a minimum, the TWC will be charged against all the property abutting a proposed new water main and extending up to one-half the difference between the proposed water main and the next parallel anticipated water main, unless a different configuration is determined by SPU to be appropriate due to a land terrain or other logical barrier.

B. Existing Service Area

Per Resolution #222, dated February 2, 1981, existing service area can be defined as:

b.1 Areas immediately abutting an existing water main and extending one hundred fifty feet (150') in depth back from the water main into this property, provided the water main extends the full distance across or along the edge of the property in question.

b.2. All land which has paid a Trunk Water assessment, and which has a lateral water main extended to within one hundred fifty feet (150') to the point of use of the water. Such lateral extensions shall be in accordance with existing Utilities Commission water main design criteria and specifications.

These existing service areas are not required to pay a TWC.

G. **Trunk Water Charge**

The Trunk Water Charge was established by an engineering study and adopted by the Commission on February 2, 1981. The TWC was subsequently reviewed and adjusted by engineering and financial studies adopted by the Commission on April 21, 2003, and again on December 3, 2007. The TWC is reviewed and adjusted annually, on January 1st of each year. The annual adjustment is based on the change in the percentage of the Engineering News Record Construction Cost Index (ENR-CCI) for the preceding twelve (12) months.

Average ENR-CCI for preceding twelve (12) months *1.02/Current TWC+ Adjustment Factor

1.1 The TWC Fee is paid by developers, not ratepayers.

1.2 The fee is calculated based on the net area of the development. Net area is total area of the parcel or plat less exempt areas listed next.

1.3 Public road right of ways, designated and protected bluff areas, delineated wetlands that remain and high-water level areas of storm water ponding shall all be exempt from the TWC.

H. **Trunk Water Costs**

The costs paid from the Water Availability Fund will include the cost of oversizing material and the costs of construction labor due to oversizing, as determined by the Commission. In addition to construction costs, there will be an allowance for engineering and finance costs.

Expenditures for oversizing, for purposes of this paragraph, must be authorized and approved by the Commission after SPU is notified in writing of any planned installations of water mains in the City of Shakopee. The Commission, in its exclusive discretion, may then find it to be in the best interest of the municipal water system that larger size mains (than those proposed) be installed and will pay the difference as provided herein.

Minimum size water main, for the purpose of this paragraph, shall be six-inch (6”) water mains in R1A, R1B, R1C, and R2 residential areas; eight-inch (8”) water mains for R3, R4, B1, B2, B3, BP, CC, NC; and twelve-inch (12”) water mains for 1-1, 1-2, E and MR zoning. Each parcel or plat must first meet the lateral watermain flow requirements before any watermain is to be considered for oversizing. The Commission is not obligated to pay additional costs unless the plans of estimated costs were presented to and approved by the Commission prior to construction of the water main, and actual cost data furnished after the completion and acceptance of the water main is satisfactory to the Commission.

Customer water rates are determined by service type and are set by the Commission on an annual basis. Current SPU water rates can be found on our website: www.shakopeeutilities.com

II. CHARGES, RATES AND FEES

A. General

The Commission has established a system of charges and fees that are detailed below. All are subject to periodic review and revision by the Commission. At a minimum, the review will be done annually. Refer to the SPU's current Fee Schedule, Water Rate, and other schedules referenced below for current amounts – www.shakopeeutilities.com

B. Charges: *Refer to the fee schedule*

1. Water Capacity Charge (WCC)

The Water Capacity Charge (previously referred to as the Water Connection Charge) was originally adopted on September 12, 1983, as part of Resolution #261. The charge amount is intended to be adjusted annually and listed in the SPU fee schedule.

2. Trunk Water Charge (TWC)

The Trunk Water Charge was originally adopted on February 2, 1981, as part of Resolution #222. The charge amount is intended to be adjusted annually and listed in the SPU fee schedule.

3. Equivalent Lateral Watermain Charge (ELWC)

To facilitate orderly development of the city and to provide adequate water service including fire protection, the Commission may choose to install a trunk watermain past parcels not yet requesting water service. In those situations, the Commission may determine an Equivalent Lateral Watermain size and cost to be assigned to said parcel(s). These charges once established are to be increased for inflation per the established policy and listed in the SPU fee schedule.

4. Temporary Water Use Permits

Temporary water service may be available for limited use during building construction when a permanent, metered water source is not readily available. A permit fee, along with a deposit, is required to be paid before a permit or meter will be issued. A minimum temporary water use charge is charged monthly until the meter is returned. Water used is charged at a per 1,000-gallon rate. See Temporary Water Permits at www.shakopeeutilities.com for current amounts.

5. Water Main Inspection

A water main inspection fee is charged for all water main construction projects. The charge is equal to actual labor and equipment costs based on current hourly rates. The project engineer estimates the installed cost of the water main project. A deposit equal to 8.5% of this cost is paid by the developer in advance of the plan approval by the General Manager. A final accounting of the inspection cost is provided upon completion of the project. Final expenses above or below the estimate will be billed or refunded, respectively, to the appropriate party.

6. Tapping (Connection) and Tapping Inspection

Taps – or connections – to existing water mains require both a permit fee and an inspection fee. Each new connection to the existing water main shall be inspected by SPU before enclosing/covering the installation. The inspection fees are charged per tap or connection.

7. Shut-Off

A shut-off fee will be charged in the event water service to a building is to be shut off, regardless of the reason (i.e., nonpayment of account balance or fees, service line damage, property abandonment, or any other cause). If the shut-off is required outside of SPU's published standard business hours, an After-Hours rate will be applied to the fee.

8. Service Reinstatement Fee

A service reinstatement fee will be charged when water service to a building is to be turned on following a shut-off event. If the reinstatement of service is required outside of SPU's published standard business hours, an After-Hours rate will be applied to the fee.

9. Water Meter Fee

For new water service installation, SPU charges a water meter fee. Payment of the meter fee is required in advance of delivery or installation. The meter fee is reviewed annually. Meters remain the property of SPU.

10. Standby Fire Protection Service

An annual fee is charged for fire protection service with an unmetered connection. The fee is applied where automatic sprinklers are installed and where fire gates and other outlets are sealed. No charge will be made for water used in extinguishing fire.

11. Private Fire Hydrant Inspection

SPU will inspect fire hydrants on private service lines as requested by customers. A fee will be charged per hydrant as stated in the fee schedule.

12. Operational Service Charge

Costs incurred by SPU in the operation of valves, flushing and filling new water mains, pressure testing of new water mains, and associated work involving new construction and reconstruction will be billed at the prevailing hourly rate, plus a prevailing equipment (truck) hourly rate. Overtime rates will apply to work done after SPU's published standard hours of operation. Refer to the fee schedule.

13. Irrigation Valve Operations Fee

In the case of an emergency or a request has been received by SPU from the irrigation owner, SPU will operate the gate valve or curb stop (i.e., on or off). There is a per-valve fee to perform this service. Refer to the fee schedule.

14. Special Equipment Charge

All costs incurred by SPU in the inspection of a special devices owned by the customer requiring periodic inspection or testing by SPU shall be billed at a fixed, hourly rate, plus any equipment rental expense. Refer to the fee schedule.

15. Customer Water Billing

Each customer billing statement is comprised of a fixed service charge, usage charge, reconstruction charge, and the MN Safe Drinking Water Fee. Customer water rates are reviewed and approved by the Commission annually. These fees are published annually and can be found at www.shakopeeutilities.com.

III. STANDARDS

The Shakopee Public Utilities Commission (Utilities Commission) is authorized by Minnesota Statutes, Chapter 412, other laws, and Shakopee City Code, Section 2.54. In addition, with that authority, the Utilities Commission hereby promulgates this water main design criteria and water main installation standards.

A. Water Main Design Criteria

1. General

All water main plans shall be checked for conformance with the minimum design criteria specified herein prior to approval for construction. No water main construction shall commence unless the contractor has in possession a set of plans approved by the General Manager. All fees, including Trunk Water Charges and a deposit on inspection fees, must be paid prior to plan approval.

All additions to the municipal water system shall be designed in accordance with the Minnesota Department of Health, the latest version of Recommended Standards for Water Works, Great Lakes Upper Mississippi River Board of State Public Health and Environmental Managers, and the standards set forth in this and other sections of this WP manual, as approved by the Utilities Commission. In case of a conflicting requirement, the standards set forth in this WP manual shall take precedence. Any work performed in a public right-of-way or in a public easement shall be approved by the City of Shakopee City Engineer.

2. Additional Approval Requirements and Drafting Standards

2.1 Vicinity Map

Each sheet shall have an overall drawing of the development at a scale no larger than 1" = 1,000' showing the location of public water mains on that sheet in relation to the total development.

2.2 Overall Plan

The plan of the study area shall have the following information:

a. Location of City or USGS benchmarks. All benchmark elevations shall be USGS 1929 Datum.
b. Contour intervals of 1 foot.
c. Topographical features including trees, posts, buildings, etc.
d. Property lines and easement lines.
e. Streets and street names.
f. Existing utilities, including water, sanitary sewer, storm sewer, power, communications, and natural gas. Include size, type, and location.
g. A master water plan shall be submitted for each planned development or other major development prior to the approval of any portion of the water system.

2.3 Profile

All plans shall include an alignment, plan view, and vertical profile for all mainline water mains. Service lines do not require the profile view. The profile shall show the elevation and location of all other utility lines where crossed, all main line tees, hydrant tees, and gate valves. Elevations of the water main and all utilities crossing shall be labeled with separation distances labeled.

2.4 Plan

The following additional elements shall be shown on water main plans:

a. Pipes with size, type, and structural class of pipe, including ASTM or AWWA specification designation.
b. Special structures or details as required.
c. Water main alignment and depth.
d. All fittings, valves, stubs, and services shall have their stationing and offset shown on the plans.
e. Each service's length shall be indicated.
f. Notes as follows: (See attached)
g. Signature block: (Refer to detail WAT-016)
h. Horizontal scale: 1" = 50'
i. Vertical scale: 1" = 10'

3. Water main

3.1 Main Size

The water distribution system should be designed to meet the maximum hourly water demand (9 gpm per acre) plus the fire flow demand as determined by ISO criteria. During peak demand and fire demand, the water pressure shall not be less than 20 psi at any point in the water distribution system. In general, a distribution system is considered to have deficient pipe looping in the following are seen under normal operating conditions. Velocities greater than 4-6ft/sec., small diameter pipe diameters (less than 16 in.) having head loss greater than 5-7 ft/100 ft., larger pipe diameters (16 in. or greater) having had losses greater than 2-3ft/1000 ft. Design parameters and

the critical-Design parameters and the critical conditions shall be shown on an overall plan of the study area. Separately, the conditions shall be shown that isolate the critical conditions. A complete analysis shall be shown, which isolates the critical condition. A complete analysis shall be submitted for any fire demand more than 1,200 gpm unless waived by the General Manager.

The minimum diameter for lateral water mains shall be as follows:

Zoning: R-1A, R-1B, R-1C, R-2……..6”
Zoning: R-3, R-4, B-1, B-2. B-3, BP, CC, NC……..8”
Zoning: I-1, I-2, E, MR……12”

Twelve-inch diameter feeder mains shall be spaced a maximum distance of 3,000 feet apart and looped to provide water from more than one source. No fire hydrant shall be supplied by a line less than six inches (6”) in diameter.

The trunk system has been approximately located within the city based on projected development and is depicted in the Comprehensive Water Plan. Actual trunk main locations will be located as development and needs arise and will be in areas most beneficial to the system as determined by the Utility Commission.

3.2 Arrangement for Distribution System

The distribution system is based on a trunk system, as noted in the Comprehensive Water Plan Study. The lateral system must be designed using the minimum pipe size included herein while meeting the flow requirements and incorporating the trunk system. The Shakopee Public Utilities Commission has a grid water system arrangement. It is imperative that any extension perpetuate that concept. The system requires the completion of water main loops and the design of a grid system that has a north-south and east-west six-inch water main every 400 feet, or any combination of water main which has at least the equivalent water carrying capacity (flow) in the north-south and east-west direction.

All water mains shall be looped, unless approved by the General Manager. Temporary dead-end water mains shall not be permitted unless approved by the General Manager.

3.3 Insulation

Insulation may be required where a water main or service line has less than the required ground cover or passes within three feet (3’) of a storm sewer or catch basin lead. Preformed insulation, PPG Foam glass or pre-approved equal, shall be installed extending a minimum, depending on pipe sizes, four feet (4’) from the water main centerline in every direction from the point of crossing as directed by the Utilities General Manager.

3.4 Easements

Permanent easements for water main outside of street right-of-way shall be a minimum of twenty feet (20’) wide. Bury depths greater than eight feet (8’) may require wider easements. The surface slope in any easement shall not exceed four feet (4’) horizontal to one foot (1’) vertical in the

steepest direction. All easements shall be obtained prior to plan approval. Certified legal descriptions and exhibits shall be provided by the applicant for water main service.

4. Valves

4.1 General

Water main valves shall be installed in the distribution system to isolate sections of water main in the event of water main failure or to reduce public inconvenience in the event the water must ever be shut off. Generally, place two valves at each water main tee and three valves at each cross. Each hydrant lead shall be equipped with a gate valve for shutoff purposes. Valves are required at the ends of water mains that run through private easements, unless waived by SPU.

4.2 Valve Spacing

Valve spacing shall be in accordance with the requirements of the following table:

Table 1
Valve Spacing

Description of Main	**Length**
Arterial (16'' and greater)	1,300
Feeder (12" not in commercial–industrial area)	800
Distribution (8" – 12" in commercial-industrial and multi-family)	500
Distribution (6" – 10")	800

Additional valves shall be installed at such places designated by the General Manager. The locations may be at the termini of new extensions or in locations which facilitate testing.

Gate valves shall be installed in water mains sixteen inches (16") and larger. Butterfly valves shall only be installed when approved by SPU.

Air and vacuum relief valves shall be installed at the high points of any water main sixteen inches (16") or larger. The air and vacuum relief valves shall be in a valve manhole.

Hydrants with downturned tee shall be installed at the low point of any water main sixteen inches (16") and larger to facilitate flushing. Fire hydrants shall be required at the end of dead-end mains where required by Shakopee Public Utilities.

Fire hydrant, as blowoffs, shall be installed at the end of all permanent dead-end mains.

Each hydrant lead shall be equipped with an isolation gate valve for shut-off purposes.

5. Fire Hydrants

5.1 Distribution

Fire hydrants shall be placed so that two fire hydrants shall be within 500 feet of every structure as measured along the public right-of-way. All public hydrants shall be located within public right-of-way or permanent easements. Closer fire hydrant placement shall be required when the fire flow requirement, as determined by ISO Criteria, exceeds 2,000 gpm or if additional fire hydrants are required to meet the requirements of the following table.

Table 2
Standard Hydrant Distribution

Fire Flow Require (gpm)	Average Area per Hydrant (Square Feet)	Fire Flow Required (gpm)	Average Area per Hydrant (Square Feet)
1,000 or less	160,000	6,000	80,000
1,500	150,000	6,500	75,000
2,000	140,000	7,000	70,000
2,500	130,000	7,500	65,000
3,000	120,000	8,000	60,000
3,500	110,000	8,500	57,500
4,000	100,000	9,000	55,000
4,500	95,000	10,000	50,000
5,000	90,000	11,000	45,000
5,500	85,000	12,000	40,000

6. Water Services

6.1 General

All services, including irrigation lines, shall be shown on the plans. All copper lines that are installed shall be free of nicks or damage. A reamer tool shall be used to remove any burrs when making a connection to brass fittings. Service lines shall be run to the nearest property line of the property it is intended to service in a trench laid out straight from the water main to that property line and at a ninety-degree (90) angle to the property line. All service lines shall maintain a minimum of 3 feet of clearance between the water service line and any storm sewer pipe or structure. Except when it is impractical, as determined by SPU, any changes to service line location or size from the approved plans shall require approval from the General Manager.

The minimum size for new service lines from the corporation stop to the curb stop shall be one inch (1”). Service lines up to and including one and one-half inch (1 ½”) diameter shall be Type K copper tubing. Services greater than one and one-half inch (1 ½”) diameter shall be ductile iron, class 52 DIP (or higher).

An industrial or commercial complex shall have a single master meter for domestic usage, unless multiple meters are approved in writing by the General Manager. One detector check valve assembly shall be installed on DCVA for all fire lines.

Post Indicating Valves (PIV) shall not be installed on service lines without prior approval of the Shakopee Fire Department.

In installations where interruptions of water are critical, it is recommended that a bypass using two (2) meters and backflow preventors be installed. This will allow for testing and maintenance without interruptions of water service. See approved detail WAT-011.

7. Record Drawings

The Engineer of Record shall provide two (2) printed copies of record drawings, and electronic files, including ACAD DWG of all linework and a PDF copy of record drawings and tie sheets within sixty (60) days of the completion of the water main improvements. Approval prints shall be submitted for review prior to the submittal of final plan and files. The plans shall be signed by the Professional Engineer licensed in the State of Minnesota. Ties shall be provided to each curb stop valve, gate valve, and water main stub.

Horizontal location of as-built data (x and y values) shall be based on the Scott County plane coordinate system. The position tolerance for any point shall be +/- 0.5 feet.

Elevations for all as-built plans shall be based on N.G.V.D. 1929. Elevations shall be +/- 0.05 feet of the stated value.

This information shall be submitted as 1 print copy and one disk compatible with the latest version of AutoCAD. The above information shall be submitted at the same timetable as the Development record drawings.

B. **Water Main Installation Standards**

1. General Conditions

The standards set forth in this and other sections of this WP manual, as approved by the Commission, and the "Standard Utility Specifications" for Water main Service Line Installation in the current City Engineers Association of Minnesota "shall apply to all work and material to be furnished."

The Shakopee Public Utilities Commission standards shall have precedence over the Standard Specifications prepared by the City Engineers Association of Minnesota.

The term "Engineer" as contained in these specifications shall refer to the project engineer as designated in the contract documents. The SPU Planning & Engineering Director or their designee may be assigned as the project engineer by the Utilities Commission.

"Customer Service Policies" are contained in Chapter I of the WP Manual, and "Water main Design Criteria" are contained in Section A, Chapter III of this WP Manual. These installation standards are intended to detail the water main and service line requirements of the service policies and design criteria.

No work shall be done on a water system extension or modifications of the existing system unless plans for the work have been approved by the General Manager and such work shall be in

accordance with all provisions of these standards and the approved plans. The General Manager's signature on the plans shall constitute approval.

Water service will not be available until installation has passed all requirements listed herein, including but not limited to all testing and the submission of an operational plan to SPU.

2. Materials (2611.2)

All materials required for this work shall be new materials conforming to the requirements of the reference specifications for the class, kind, type, size, grade, and other details indicated in the Contracts. Unless otherwise indicated, all required materials shall be furnished by the Contractor. If any options are provided for, as to type, grade, or design of the material, the choice shall be limited as may be stipulated in the Plans, Specifications, or Special Provisions.

All manufactured products shall conform in detail to such standard design drawings as may be referenced or furnished in the Plans. Otherwise, the Owner may require advance approval of material suppliers, product design, or other unspecified details as it deems desirable for maintaining adopted standards.

The Contractor shall submit, in writing, a list of materials and suppliers for approval by SPU.

A Certificate of Compliance shall be furnished stating that the materials furnished have been tested and follow the specification requirements.

2.1 Ductile Iron Pipe and Ductile Iron Fittings (2611.2A1)

The minimum design thicknesses of ductile iron pipe shall be CL 52 unless approved by the Utilities General Manager in writing.

All ductile iron pipe will be wrapped in accordance with Section 2.8 Corrosion Protection.

Zinc-coated water main and Enhanced V-Bio polyethylene encasement shall be used when paralleling within 20 feet of a gas easement or any other easement containing an induced current cathodic protection.

Ductile iron pipe shall conform to the requirements of ANSI/AWWA A21.51/C115 or C151 for potable water, and thickness design shall conform to AWWA C150. Also, the pipe shall comply with the following supplementary provisions:

1. Fittings shall conform to the requirements of ANSI/AWWA A21.10/C110 (Gray Iron and Ductile Iron Fittings) or ANSI/AWWA A21.35/C153 (Ductile Iron Compact Fittings) for the joint type specified.

2. Unless otherwise specified, all pipe and fittings shall be furnished with cement mortar lining meeting the requirements of AWWA C104 for standard thickness lining. All exterior surfaces of the pipe and fittings shall be an asphaltic coating at least one mil thick. Spotty or thin seal coating, or poor coating adhesion, shall be cause for rejection.

3. Fittings specified to be furnished with fusion-bonded epoxy external coating and/or interior linings shall conform to the requirements of AWWA C550 and C116/A21.16, with 6-8 mil nominal thickness.

4. Rubber gasket Joints for Ductile-Iron Pressure Pipe and fittings shall conform to ANSI/AWWA A21.11/C111.

5. The nuts and bolts shall be constructed of corrosion-resistant, high-strength, low-alloy steel with a ceramic-filled, baked-on fluorocarbon resin. The nuts and bolts shall comply with ANSI/AWWA C111/A21.11 (Current Revision).

6. Conductivity shall be maintained through pipe, fittings, and hydrant shoe with an external copper jumper wire, strap, or specialty gasket, and shall be capable of meeting conductive requirements. The connection must be capable of withstanding 600 amperes of current and must be approved in writing by the engineer. Wedge-type connectors will not be allowed.

7. For pipes sized larger than 16 inches, the pipe metal thickness and class shall be as required by the General Manager. The General Manager can require a heavier grade pipe if depth conditions or other criteria require.

8. Mechanical joint pipe shall comply with ASA Specification A-21.11.

9. All pipe and fittings shall be furnished with cement mortar lining meeting the requirements of ANSI A21.4 for standard thickness lining. All interior and exterior surfaces of the pipe and fittings shall have a tar or bituminous seal coating at least one mil thick, except in cases of epoxy coated materials. Spotty or thin seal coating or poor coating adhesion shall be cause for rejection.

10. Fittings shall be ductile iron and shall be Class 350 for sizes up to and including twelve inches (12") in diameter, shall conform to ANSI/ASSA C153/A-01.53-84 or ANSI/AWWA C110/A21.15-83 covering short body and standard fittings, and shall be a mechanical joint. Fittings over twelve inches (12") in diameter shall comply with the above specifications and may be a minimum Class 350. All fittings shall have the year of manufacture cast on the body and shall not be older than one (1) year at the time of installation. All pipe joints shall be approved slip-type or mechanical joint with a rubber gasket. Gaskets shall be molded rubber rings made expressly for the joint used (ANSI A.21.11)

11. Electrical conductivity must be provided across each joint, including at fittings, valves, and hydrant boots, by means of metal cables or straps welded or otherwise permanently fastened across the pipe joint or an approved conductive gasket with copper inserts like "Fastite" by American Cast Iron Pipe Company. The connection must be capable of withstanding 600 amperes of current and must be approved in writing by the engineer.

12. All pipe and fittings shall be manufactured in the United States and NSF 61 approved.

2.2 <u>Polyvinyl Chloride (PVC) – Pressure Pipe (2611.2A3)</u>

PVC pressure pipe shall not be permitted in the system.

2.3 Valves and Boxes (2611.2C1 and 2611.22)

Resilient Wedge gate valves/butterfly valves, including all accessories, manholes or vaults, and frames and covers, shall be considered as an integral unit, and the bid price shall include all these items.

Gate valves shall be used for all isolation valves, regardless of pipe size, unless specified by SPU. Gate valves shall be ductile iron, resilient wedge gate valves rated for 250 psi. meeting AWWA C50 requirements unless otherwise specified.

If specified by SPU, butterfly valves shall only be installed on 16" and larger water mains.

Butterfly valves shall be manufactured in conformance with all applicable requirements of AWWA C-504 for 150 psi. working pressure minimum, together with such supplementary requirements as may be covered in the Plans, Specifications, and Special Provisions. Unless otherwise specified, the butterfly valves furnished shall comply with the following supplementary requirements.

1. The butterfly valves shall be of short body type made of ductile or cast iron with mechanical joint ends.

2. The butterfly valves shall be rubber seated with a ductile or cast disc, non-rising stem type, furnished with O-ring stem seals.

3. The butterfly valves shall be equipped with a two-inch square operating nut opening counterclockwise.

4. The butterfly valves shall be designed for direct burial installation.

5. All butterfly valves shall have an open indicating arrow, the manufacturer's name, pressure rating, and year of manufacture on the valve bodies.

6. All internal and external surfaces of the valve body and bonnet shall have an epoxy coating, complying with ANSI/AWWA C550.

7. All butterfly valves shall have stainless steel body bolts unless otherwise specified.

Valve boxes shall be cast iron of the three (3) piece type with five and one-fourth inch (5 ¼") shafts, screw-type, one and one-half inches (1 ½") between threads, bases maybe a #6 round or a #160 oval suitable for a depth of eight feet six inches (8' 6") to the centerline of the pipe. Valve boxes shall be Tyler Domestic 6860 Series Item G with a stay-put cover bearing the word "Water" on top or approved equal. An Adaptor Brand 6 Base Multi-Fit Valve Adapter shall be installed on all gate valve boxes. Metal centering adapters shall not be allowed. Valves deeper than 8" may be require having nut extensions installed for elevation to accommodate a standard 10" operating key. The bottom nut shall be bolted to

the valve nut and only one section. Valve boxes shall have at least six inches (6") adjustment above and below the specified depth of pipe with a thirty-six-inch (36") bottom section. Adjustments to be made with Tyler items 58, 29, or 60 extensions of appropriate length or approved equal. No screw-type adjustable risers, such as Tyler Items 67, 68, or 69, or similar risers shall be used. No slip-type adjustable risers, such as Tyler Items 67-A, 68-A, 69-A,64-A, or 65-A, or similar risers shall be used.

An external copper jumper wire, strap, or cable around all bodies of valves.

Butterfly valves sixteen inches (16") and larger shall be provided with precast concrete vaults or manholes placed over the operators unless other specified.

7. Water main vaults may consist of precast concrete manhole sections with integral base and shall be manufactured to standards at least equal to or greater than the requirements of the standard specifications for reinforced concrete culvert storm drain, and sewer pipe, ASTM designation C76-72 for Class II. The internal diameter shall be as shown on the detailed drawings. Precast top sections for manholes shall conform to requirements as shown on the detail drawings. Connections from the pipe to the manhole shall be made with the "cre-seal" or "reseal" or approved equal. Cast iron for manhole frames and covers shall be not less than Class 30 or grey iron, free from all injurious defects and flaws, and shall conform to ASTM Designation A48-64. All covers must fit closely in the rings in all positions so that there will be no rocking from pressure applied on any point of the cover. All castings shall conform to the weight, type, and size as shown on the detail drawings. Covers shall bear the words "Water" on the top. The supplier of castings must be approved by the engineer. The supplier shall certify to the engineer that each shipment conforms to these specifications. Such certification shall accompany each shipment to the job site.

   RW gate valves/butterfly valves, including all accessories, manholes or vaults, and frames and covers, shall be considered as an integral unit, and the bid price shall include all these items.

2.4 Air Release Valve Assembly

Air/Vacuum relief valves, Crispin Model PL-10-5/16" orifice-100 psi operating pressure, shall be installed at the high points of any water main sixteen inches (16") or larger. Air release valve assembly shall include the complete valve assembly, and the vented vault positioned over the water main where the air/vacuum valve is installed.

The vault for the air release valve shall consist of precast concrete manhole sections with integral base which shall conform to the requirements for water main vaults specified above and shall conform to the requirements as shown on the detail drawings. Connections from the pipe to the manhole shall be made with the "cre-seal" or "reseal" or approved equal. Where groundwater is below the manhole floor grade, a one-foot by one-foot (1' x 1') sump hole is to be installed with one and one-fourth inch (1 ¼") washed crushed rock installed for drain.

2.5 Blowoff Valve Assembly

a. Temporary Two-Inch (2") Blowoff Assembly

Temporary two-inch (2") blowoffs shall be installed in those portions of the water mains which could not be chlorinated, flushed, or tested by other means.

The two-inch (2") blowoff assembly consists of all valves, pipe, and materials necessary to install the blowoff valve completely in place and shall be constructed in accordance with the detail drawings (Refer to detail WAT-010).

2.6 Fire Hydrant Assembly (2611.2B)

Hydrant length shall provide for a cover of eight feet, six inches (8'-6") over the centerline of the lead pipe (i.e., 8 ½ feet bury). In the event existing grade necessitates the use of a longer hydrant, the contractor shall tip the hydrant tee and use a 45-degree bend to maintain seven and one-half feet (7 1/2") of cover in the street and correct the bury of the hydrant location.

In areas where the hydrant base is installed below groundwater, the hydrant shall not have a drain, and the hydrant shall be marked with a metal tag to indicate "No Drain." The hydrant valve shall be of the type to open against system water pressure.

The valve shall be faced with specially processed valve rubber and shall have a tapered seat for positive closure. This entire mechanism shall be removable for repairs or replacement through the barrel without excavating.

Outlet nipples shall be bronze, securely fastened into the nozzle section. Hose and steamer caps shall be provided with rubber gaskets.

"O" ring seals shall be provided to prevent water from reaching the operating mechanism.

The operating mechanism shall be lubricated through an opening in the operating nut or bonnet. All moving parts are to be bronze-brushed. All parts of hydrants furnished shall be interchangeable with all other hydrants of the same size, model, and make without special fittings.

The hydrant shall be Waterous Pacer; traffic type and shall be painted with bright yellow (#m4106-1) enamel with a green (#m4105-1) bonnet meeting all AWWA C502 requirements. Waterous hydrants shall be WB67-250 with the standard two-piece operating nut, stainless steel bolts at hydrant bottom, five and one-fourth inch (5 ¼") by eight and one-half foot (8 ½') bury, DDP nozzles, two (2) two and one-half (2 1/2'") and one (1) four and one-half inch (4 ½"), number 7532 and 40524, with National Standard fire hose coupling threads, six-inch (6") mechanical joint, #5 operating nut, open left (CC), nut-type caps with chain, sixteen-inch (16") breakoff section, paint yellow (3M4106-1) with green (#M4105-1) bonnet. All hydrants are to have a year of manufacture and shall not be more than one (1) year older than the year of installation.

Hydrant extensions are not allowed to be used unless approved prior by SPU.

Private fire hydrants shall meet all the requirements of Section B.2.4, except that the 4 ½" nozzle cap shall be painted Bright White (Waterous #M4109) to identify it as a private hydrant.

RoDon Corporation Hydrafinder with flat bracket and spring must be used on all hydrants installed. One (1) extra Hydrafinder per hydrant installed must be provided to SPU.

Water Service Pipe and Fittings (2611.2D)

a. Curb Stop and Box

1. Curb stop valves shall be the following brand and model or SPU-approved equivalent:
   1" Ford Model B-44-444M-Q-NL or AY McDonald Model 76104Q 1
   1 ½" Ford Model B-44-666M-Q-NL or AY McDonald Model 76104Q 1 ½
   All compression fitting connections on HDPE pipes require stainless steel pipe stiffeners to be installed into the pipe before installation. Reference the HDPE pipe manufacturer's instructions on installing stainless steel inserts.
   Curb stop valves that have been previously installed with a flare copper tube nut shall have the flare nut removed, and a flare-to-C.T.S. compression adapter with a copper gasket shall be installed to make the transition from flared to compression connection. Adapter shall be AY McDonald 1" or 1 ½" 74755Q NL or SPU-approved equivalent.

2. Curb boxes shall be Mueller H-10300 or AY McDonald 5614 or approved equal for three-quarter inch (3/4") and one-inch (1") curb stops, AY McDonald 5614 or approved equal for one and one-half-inch (1 ½"), all with one and one-fourth inch (1 ¼") steel pipe upper section adjustable up or down six inches (6") from seven and one-half feet (7 ½') of cover. Curb box base casting shall be threaded to match the curb stop. Lids to have a pentagon plug with the word "WATER" in raised letters. No operating rods are allowed to be installed in the curb box.

   If the curb box ends up on a sidewalk, bike path, or driveway, a Ford A-1 cover or Power Seal cover will be installed.

b. Corporation Stops

   Corporation stops shall be 1" Ford Model FB1000-4Q-NL or AY McDonald Model 74701BQ or approved equivalent
   1 ½" Ford Model 1FB1000-6Q-NL or AY McDonald Model 74701BQ 1 ½ or approved equivalent.
   All corporation stops shall be compression type; flared copper connections are not allowed.
   Services over one inch (1") shall use a tapping saddle.

c. Gate Valves

Gate valves used for water services shall conform to Article 2.3 of these specifications.

2.7 Corrosion Protection (2611.2E)

Corrosion protection shall be incidental to construction, as shown on the drawings. All ductile iron pipe and all fittings shall be wrapped in V-Bio Enhanced Polyethylene Encasement tubing in accordance with AWWA Standard C105/A21.5 and these specifications to prevent corrosion, the polyethylene tubing shall meet the following specifications: Reference detail WAT - 30

V-Bio Enhanced Polyethylene Encasement for Ductile Iron Pipe

Polyethylene encasement for use with ductile iron pipe shall meet all the requirements for ANSI/AWWA C105/A21.5, *Polyethylene Encasement for Ductile Iron Pipe Systems.*

In addition, polyethylene encasement for use with ductile iron pipe systems shall consist of three layers of co-extruded linear low-density polyethylene (LLDPE), fused into a single thickness of not less than 8 mils.

The inside surface of the polyethylene wrap to be in contact with the pipe exterior shall be infused with a blend of anti-microbial biocide to mitigate microbiologically influenced corrosion and a volatile corrosion inhibitor to control galvanic corrosion.

Ductile iron pipe and the polyethylene easement used to protect it shall be installed in accordance with AWWA C600 and ASNI/AWWA C105/A21.5 and in accordance with all recommendations and practices of AWWA M41, *Manual of Water Supply Practices-Ductile Iron Pipe and Fittings.* Specifically, the wrap shall be overlapped one foot in each direction at joints and secured in place around the pipe, and any wrap at tap locations shall be taped tightly prior to tapping and inspected for any needed repairs following the tap.

All installations shall be carried out by personnel trained and equipped to meet these various requirements.

b. Blue Bolts

CORE-Blue t-bolts or equivalent must be used on mechanical joints. Shall be of domestic origin, high-strength, and low alloy steel bolts only, meeting the current provisions of American National Standard AWWA C111 for rubber gaskets, joints for cast iron, or ductile iron pipe and fittings.

2.8 Insulation (2611.2J)

No detail – to be used only if prior approval in the design stage.

2.9 Alignment and depth

To facilitate locating, water mains generally shall be placed twelve feet (12') south and west of street centerlines. Water mains shall have a minimum coverage of seven and one-half feet (7 ½"). That shall be seven and one-half feet (7 ½') below final grade and any intermediate grade, whichever requires the greatest depth. [When a water main pipe crosses a sewer pipe, the water main shall be laid above the sewer pipe with eighteen inches (18") vertical separation from the bottom of the water pipe to the top of the sewer pipe.] Water main pipe shall be laid no closer than ten feet (10'), measured edge to edge, to any sewer pipe unless water main quality, C900 PVC or CL 52 DIP sewer pipe is used.

There shall be a minimum clearance of 1 ½ feet between the water main pipe and any sewer structures.

2.10 Pipe Laying Operations (211.3A2)

Fine grading to trench bottom should be true and even so that the barrel of the pipe will have soil support for its full length, shall proceed ahead of the pipe laying; and should any over-excavation exceeding two inches (2") be encountered, the material added shall be moistened if necessary and compacted to the satisfaction of the engineer, or foundation material shall be added at the expense of the contractor.

Before lowering and while suspended, the pipe, fittings, and valves shall be inspected to detect any debris, defects, or cracks. Any defective, damaged, or unsound material shall be rejected, marked, and removed from the project site.

The pipe shall be supported for the bottom ninety degrees (90) and throughout its length as shown on the plans. Bell holes shall be dug adequately to make the joint, but no larger than necessary, so that maximum support on undisturbed ground will be provided for the pipe. The pipe backfill material shall be dry granular material or fine graded suitable material to flow under the pipe haunches, then compacted a minimum of one pass on each side of the pipe with a mechanical compactor to the spring line of pipe to completely fill all voids under and adjacent to the pipe. The remainder of the pipe shall be surrounded to a height of at least twelve inches (12") above its top by granular materials or other suitable material as determined by the engineer. Bedding material within twelve inches (12") of the pipe shall be free of rock fragments larger than three inches (3") in diameter.

Ground water shall always be kept at least zero-point ten feet (0.10') below the invert of pipe. If this cannot be accomplished with pumps and equipment on-site, a gasketed plug shall be placed into the bell end, and pipe laying shall cease until the water table is maintained to zero point ten feet (0.10') below the invert of pipe. It is the contractor's responsibility to have a plug on-site for all pipe diameters on the project. A temporary plug or "cookie" shall always be in the ditch during pipe laying operations to be installed in the end of each pipe to prevent debris or soil from entering the pipe. Failure to follow this procedure shall be reason to stop the contractor's pipe laying operations.

All foreign matter or dirt shall be removed from the inside of the pipe and fitting before it is lowered into its position in the trench, and it shall be kept clean by approved means during and after laying. Any foreign objects found in mains and hydrants during flushing shall be removed by the contractor at the contractor's expense.

2.11 Blocking and Anchoring of Pipe (2611.3A4)

All plugs, caps, tees, bends, and other thrust points shall be provided with reaction blocking or movement shall be prevented by attachment of approved restraining devices in accordance with the plans and standard details. Refer to the detail plates WAT-007 and WAT-012. Plugged tees and crosses on a straight run do not require restraint.

Horizontal Bends. Cast-in-place concrete blocking, rodding, or *Megalug* joint restraints.

Vertical Bends. Rodding or *Megalug* joint restraints.

Flushing Hydrants. Rodding or *Megalug* joint restraints.

Hydrant and Service Line Leads. Rodding or *Megalug* joint restraints, tied all the way back to the tee with the main line.

Where ready-mix concrete thrust blocks are used, testing of lines shall not proceed until the concrete has had sufficient time to attain design strength (minimum seven (7) days). High early-strength concrete may be used (minimum three (3) days). Polyethylene between the thrust block and fitting.

Feet of Restrained Pipe on Each Side of the Bend		
Size of Pipe	**8' Cover**	
	Bend Sizes (Degrees)	
	22 1/2	45 1/2
3"*		
4"*	1	3
6"	2	4
8"	3	5
10"	4	5
12"	5	8
16"	6	10
***Service line pipe only**		
Note 1) Table is based on sand excavation, for silt increase 50%		
2) If polyethylene wrapping is used, increase value by 100%		

Where rodding is used, metal rods and riser clamps shall be installed as shown on the detail sheets. "I" bolts and washers shall be used to fasten rods to mechanical joints; duct lugs are not acceptable. When used, all rods, bolts, nuts, washers, and cad-weld shall be

coated with bitumastic coal tar. Rods used for tying back shall be three-fourths inch (3/4') diameter, stainless steel, threaded rod with couplings (if used) designed for use with such rods.

When connecting to existing stubs, all necessary work to make the joint restraint shall be done at no additional compensation. If any copper straps are damaged, they must be repaired to ensure that conductivity is restored.

Where joint restraints are required, the minimum length of tied pipe shall be in accordance with the previous table. This assumes sand excavation, in other soils, or if the pipe is polywrapped, additional joint restraint may be required.

Restraint rodding on combination domestic/fire service lines and dedicated fire service lines shall meet the requirements of NFPA 24.

All joints within steel casing must have a restraining method pre-approved by Shakopee Public Utilities. Refer to the detail plate WAT-013. Utility requires a 24-hour notice to witness filling the void in casing when filled with sand.

For pipe sizes larger than 16 inches, the feet of restrained pipe on each side of the bend shall be as required by the General Manager.

When connecting to existing stubs, the contractor shall take every precaution necessary to prevent dirt or debris from entering the existing lines. A sump below the invert shall be excavated, pumps shall be on hand, and a course bag placed over the pipe to allow water to pass through but prevent debris from flowing back into the pipe. A chlorine solution and shop clothes shall be on-site to cover the open pipe until the time of connection. The pipe, fittings, including valves, shall be disinfected before installation. See Section 2.20. All necessary work to make the connection shall be done with no additional compensation, except where noted otherwise.

2.12 Pipe Installation in Steel Casing

All carrier pipe installed within casing pipe shall be installed with APS brand Casing Spacers Model SSI or an approved equivalent. The casing spacers shall be placed per the manufacturer's specifications on the pipe. Treated wood skids are not allowed.

All joints within steel casing must have restraining methods such *as American Pipe Amarillo Fast-Grip Gasket*, pipe manufacturer equivalent, or SPU-approved method. Refer to the detail plate WAS-013.

SPU requires a 24-hour notice to witness filling the void in the casing when filled with sand.

2.13 Water Service and Meter Installation (2611.3E)

Water services shall be located at least three feet (3'), measured horizontally, and two feet (2') measured vertically, away from water main quality pipe used for sanitary sewer services, ten feet (10') from all other sewer services. Water services shall be placed upstream from sanitary sewer services. Curb boxes shall be located one foot (1') inside the right of way on projects north of Trunk Highway (TH) 169 and one foot (1') inside the utility's easement on projects south of TH 169. A concrete block or brick shall be placed under the curb box.

1" and 1 1/2 "Cooper pipe shall be Type K copper, annealed, seamless, and conform to the requirements of ASTM B99, Type K.

1" and 1 1/2" High-Density Polyethylene (HDPE) pipe shall have a maximum operating pressure rating of 250 PSI, meet the specifications of the Plastic Pipe Institute standard PE 4710, conform to Cooper Tube Sizing (C.T.S.), and Standard Dimension Ratio (SDR) of SDR9. HDPE pipe shall meet the requirements of the current edition of the AWWA Standard C901, ASTM D-2737, and N.S.F. Standards NSF-14 and NSF-61. HDPE pipe shall be Polyethylene Technology, Inc. Blue Ultra or SPU-approved equivalent.

Type K copper and HDPE service pipe shall be installed continuously without joints between the corporation stop at the water main and the curb stop. Plastic service pipe shall not be installed from the corporation stop to the curb stop.

Type K copper or SPU-approved HDPE service pipe shall be installed from the curb stop to the water meter connection.

A tracer wire is not required when using copper pipe from the curb stop to the building.

A tracer wire per SPU tracer wire specifications shall be installed on all HDPE service lines from the curb stop into the building, which meets the following requirements. See WAT-027 detail.

All tracer wire shall be rated open cut (installed via open trench/plowing), copper clad steel (CCS) reinforced wire, 12 AWG, with a minimum of 452 lb. break load, and with blue color (indicates potable water) HDPE insulation with a minimum 45 mil insulation thickness.

Tracer wire shall be the following brand model: Copperhead Industries, Part Number 1245B-HS** (where ** indicated spool length of 500, 1000, 2500)

Tracer wire ground rod shall be the following brand and model: Copperhead Industries, Part Number ANO-12

All tracer wire ground rods shall be at least 1.5 lbs., magnesium, drive-in type, with an HDPE cap protecting the bonded ground rod tracer wire. Bonded tracer wire shall meet SPU-approved tracer wire specifications.

Tracer wire connector shall be the following brand and model below, or SPU-approved equivalent:

Copperhead Industries SnakeBite locking Connectors: Part Number LSC1230C-** (where ** indicates quantity of connectors ordered CTR10, CTR25, or BLUCK).

Copperhead Industries twist-on connector (part Number SCB-01) provided with the ground rod may not be used.

Curb Stop Lid – HDPE Pipe Application – For installations where HDPE pipe is installed from the curb stop to the building, the following brand and model shall be used, or SPU-approved equivalent:

Ford FPLLIDTW 1 ¼"
Ford FPXLIDTS 1 ½"
A/Y McDonald 5614LTW 1 ¼'
A/Y McDonald 5623LTW 1 ½"

1. The wire shall be installed as a single continuous wire, except where using approved connectors. No looping or coiling of wire around the pipe is allowed. Any damage occurring during the installation of the tracer wire must be immediately repaired by removing the damaged wire and installing a new section of wire with approved connectors. Taping and or spray coating shall not be allowed as a repair. The tracer wire shall be secured to the underside of the pipe with tape or ties at 5-foot intervals. The tracer wire shall connect to the ground rod's tracer wire using an approved connector and shall not continue into the building.

2. All connections shall be made with Copperhead Brand Snakebite Locking Connectors. The wire shall be installed into the connectors per the manufacturer's instructions.

3. A Copperhead Brand ground rod with a 12 AWG wire (Part Number ANO-12) shall be installed not more than 12" from the foundation of the building. The ground rod shall be placed directly adjacent to the waterline and driven into the trench, at or below the elevation of the waterline. The manufacturer's attached wire on the ground rod shall be unwound from the ground rod, cut down to a length of 6 inches, and the tracer wire shall be connected to the ground rod wire via a SnakeBite Locking Connector (Par Number LSC1230C).

4. There shall be 24 inches of excess/slack on the wire, after making the connection to the curb stop cover or cap, to allow for adjustment of the curb stop box. It shall be the responsibility of the builder to ensure that the curb stop cover or cap is at, or within 1" below the final grade.

5. Every copper service pipe must be laid sufficiently waving to allow not less than one (1') foot of extra length and in such manner as to prevent rupture of settlement.

6. The water service pipe must be placed not less than seven and one-half feet (7 1/2') below the surface and in all cases so arranged as to prevent rupture by freezing.

7. Water service pipes must extend from the water main to the curb stop and then, from the curb stop to the inside of the building. A shutoff valve of the size and

strength required shall be placed close to the inside wall of the building, well protected from freezing.

8. Type K copper tubing shall be used up to and including one and one-half inch (1 ½") services. Two-inch (2") or greater copper is not allowed for services, including lawn irrigation services.

9. All joints or fittings on water services lines shall be compression type fittings, No-flare type fittings or galvanized iron pipe or fittings are permitted.

10. All brass fittings that are installed on any water main or water service line shall be lead-free (NL).

11. Joints on copper tubing shall be kept to a minimum, with no joint used for a one-inch (1") service up to one hundred feet (100') in length, and no joints in sixty feet (60') for one and one-half inch (1 ½") service. No joints shall be under a concrete floor.

12. Service saddles shall be used wherever the tap size exceeds one inch (1"). Service saddles shall be Smith Blair Type #313 or approved equal and have double stainless-steel straps.

13. The water service line shall be left uncovered until inspected.

14. All water services over one and one-half inches (1 ½") shall be ductile iron and shall be constructed and tested in accordance with these specifications for the water main pipe.

15. Water meter(s) shall be installed on the incoming water service line as near as practicable to its point of connection to the water main and shall be upstream of all other devices except that a single stop valve is to be installed upstream of the water meter. Water meter installations shall also be at least six inches (6") away from the wall.

16. The water service pipe from the curb stop to the water meter, when the same enters the building, shall be brought through the floor in a vertical position. The upstream stop valve before the water meter shall be installed between 18" – 24" above the finished floor.

17. The water meter shall be measured horizontally from the inside line of the basement wall unless an alternate method is approved in writing by Shakopee Public Utilities. The water meter shall be set in a horizontal position, or a position approved by the water meter manufacturer, and shall be readily accessible for maintenance and reading.

18. All water meter installations shall have a stop valve on each side of the water meter. All stop valves shall be ball valves for one and one-half inch (1 ½") diameter and less. All stop valves greater than one and one-half inch (1 ½")

diameter shall be gate valves. In no case shall there be more than twenty-four (24") of pipe exposed between the point of entry through the finished basement floor and the stop valve upstream of the water meter. Valves that are part of a backflow assembly are for testing purposes only of the backflow assembly and are not considered a stop valve. Galvanized iron pipe or fittings shall not be used.

19. The water pipe connecting with the main shall not run under any basement floor for more than two feet (2'), measured from the inside of the basement wall, before being connected to the water meter, unless approved in writing by Shakopee Public Utilities.

20. All three-fourths-inch (3/4") and one-inch (1") meters shall be set in an appropriate meter setting device approved by Shakopee Public Utilities.

21. Where the HDPE water service line enters the building, bracing attached to a solid structure, such as a wall shall be provided to ensure that the weight of the water meter, meter horn, and fittings is not supported by the HDPE water service line. The bracing shall also provide stabilization from the service line moving horizontally or vertically to prevent damage. A minimum of 24" of tracer wire must extend through the floor. Bracing is not required when using Type K Copper instead of HDPE pipe.

2.14 Water Service and Meter Installation (2622.3C)

2.15 Water Meter Installation Standards for Commercial and Industrial Installations

All water meters shall be supplied by SPU upon payment of the appropriate fees.

1. All water meters and backflow prevention assemblies must be installed horizontally.

2. Do not install check valves or backflow prevention assemblies upstream (before) of the water meter.

3. Pressure-reducing devices shall be installed upstream of the meter for all installations.

4. Check valves should not be located closer than five (5) pipe diameters from the water meter.

5. Because of the need to test large water meters periodically, the meter test outlet is required to provide for testing a water meter in line. The service saddle (or reducing tee) must be at least three (3) pipe diameters downstream of the meter's outlet flange.

6. In installations where interruptions of water service are critical, it is recommended that a bypass line using two (2) water meters and backflow prevention assemblies

be installed. This will allow for testing and maintenance without interruption of water service (WAT-011 Detail Plate).

7. The detail plate for backflow prevention assemblies is a guide; all provisions of the state plumbing code must still be followed.

8. When Irrigation water meters are installed in outside enclosures, it shall be the responsibility of the irrigation system owner to protect the water meter from damage and freezing. Any repairs required due to damage from the seasonal installation or removal of the water meter, damage due to the water meter not being protected from freezing, or general damage, not attributed to normal wear, shall be billed to the irrigation system owner.

2.16 Connection To or Interruption of Existing Facilities

Prior to connecting to existing water mains, the SPU Water Department must be notified. Any residents/customers who will be affected by the shutting off of water shall be given advance written notice as to when and for how long service will be interrupted. A minimum of forty-eight (48) hours advance notice shall be given. Shakopee Public Utilities shall make all notifications for the shutting off of water involving public water mains.

The contractor shall always coordinate the work to be done with SPU and obtain any necessary permits from the ROW authority. When it is necessary to connect to the existing water system or close existing portions of the water system due to construction operations, the contractor shall discuss that phase of the planned starting date to allow for orderly planning and coordination by SPU.

The contractor shall take the steps considered necessary by the General Manager for the protection of the existing water system and the health and reasonable convenience of water users. No water shall be shut off or work done on the existing water system without approval of the General Manager. Normally, water will not be shut off before 8:00 A.M. and shall be restored by 4:00 P.M. the same day, unless special conditions require otherwise.

The contractor will give at least forty-eight (48) hours prior notification to SPU of any necessary valve operations or of any shutting down of the existing water system.

ALL WATER MAIN VALVES THAT ARE IN SERVICE SHALL BE OPERATED BY AUTHORIZED SHAKOPEE PUBLIC UTILITIES PERSONNEL ONLY. Unauthorized operations of the valves are subject to fines under city code. The contractor shall conduct operations in such a manner as to minimize inconvenience to the public due to disconnected water service.

If interruptions of water service are not permitted, temporary measures to ensure the continuance of the water supply shall be at the contractor's expense. Shakopee Public Utilities' "Requirements for Potable Water By-Pass" must be followed and approved by a Utilities representative. In the event water service is disconnected beyond the specified time, the General Manager shall have the authority to order a temporary utility service installed by utility forces or by a third party at the contractor's expense.

The contractor shall take every precaution necessary to prevent dirt or debris from entering the main.

Tapping of the water main must be made under pressure, as shown on the plans.

It will be necessary for the contractor to tap copper water services into existing mains where shown on the plans or directed by the engineer. The Water service materials shall be paid in the same manner as other services.

2.17 Structure Adjustment

All valve boxes and manholes in bituminous pavement shall be set one-half inch (1/2") below the bituminous surface. Adjustments shall be considered incidental to installations regardless of the number of interim adjustments.

2.18 Potable By-Pass Requirements

Every potable water bypass is to be reviewed and approved on an individual case basis only. All material and equipment shall be installed and maintained to prevent damage, thus disruption of service, and loss of water.

A temporary meter may be required and supplied by SPU upon payment of a deposit and fees. Any RPZ backflow prevention assembly shall be provided by the contractor, which shall be installed downstream of the meter. The RPZ shall be tested by a licensed tester after installation, and before the temporary water bypass is placed in service.

All piping materials shall be NSF/ANSI 61-approved materials.

Bypass equipment and materials shall be approved on-site by SPU or its representative before hook-up.

All materials and equipment shall be flushed, disinfected by approved methods. Bacteria tests will be required before the commencement of use.

It is the responsibility of the Contractor or the owner/consumer to maintain the by-pass system, prevent it from damage, protect it from freezing, and be responsible for any malfunction or disruptions that would cause problems or damage to the Utilities system and water quality.

Above-grade bypass systems will not provide fire protection for the consumer. Proper notification of changes in fire protection shall be the responsibility of the property owner.

Water department personnel's time for review, inspection, approvals, testing, and removal shall be reimbursed by the consumer.

Timely notification to SPU shall be made before the disconnection of the bypass system.

All valves shall be operated by SPU personnel only.

Before connecting to existing water mains, the contractor shall have all persons, materials, and equipment ready to do the work, to keep the shutoff time to a minimum. As soon as possible after making the connections, Shakopee Public Utilities personnel shall flush mains at a velocity not less than three feet (3') per second to prevent any contamination of existing facilities.

2.19 Setting Hydrants (2611.3D)

Hydrants shall be supported upon a precast concrete bases eighteen inches (18") square and a minimum of five inches (5") thick. Each hydrant is to be securely tied back to its auxiliary valve, Copper Straps around all epoxy fittings including hydrant boot, and that valve tied back to the tee as shown on the detail sheet, and as described under "Block and Anchoring of Pipe Article 3.5 of this specification. Hydrant shall be set so that top nut of hydrant is thirty-four inches (34") above finished grade. There shall be 0.2" between finished ground level and bottom of flange.

8 mil poly over drainage rock at least one cubic yard (1 CY) per detail sheet shall be installed at each hydrant with compacted one and one-half inch (1 ½") clear crushed washed stone under and around the hub end and concreate base, to a level of six inches (6") above the drain opening. Tee shall be six-inch (6") mechanical joint to hydrant. See WAT-008.

Hydrants shall be surveyed upon installation to ensure proper elevation. Hydrant extensions are not permitted by SPU.

Care must be taken when handling hydrants to protect the paint. Whenever the paint is chipped or scratched, the contractor shall repaint the hydrant per detail information.

Hydrants must maintain their position and must not be displaced out of plumb during backfilling. Any hydrant out of plumb shall be excavated, reset, re-braced, re-backfilled and possibly retested.

Top-of-guard posts where required, should be six inches (6") below the operating nut of the fire hydrant.

No plantings, bushes or trees will be allowed within 3-foot clearance radius around fire hydrant. Shakopee Public Utilities retains the right to clear and/or cut down planting within clearance area around hydrant.

Hydrants that placed in areas that have a high ground water table shall have the drain plugged and the hydrant shall have a tag installed stating "No Drain".

2.20 Disinfection (2611.3E)

A. General

The contractor shall disinfect and test all mains at no additional compensation regardless of existing conditions. This may include repairing existing facilities that must be included in the test and are not capable of holding test pressures. Before being materials and procedures, and the collection and testing of water samples, shall be in accordance with the provisions of AWAC-651. After the final flushing of the water main, the water shall be tested for bacteriologic quality and found to meet the standards prescribed by the Minnesota Department of Health. Watermain that remains turned off for longer than 1-month period after testing, requires a new bacteriological test be completed prior to water being turned on at the expense of property owner. The tables shall be placed on the top side of each pipe interior at the time of the pipe installation. The tablets shall be attached to the pipe with an (food grade) adhesive meeting the requirements of NSF/ANSI 61.

- See the following table for the tablet guide:

Chlorine Dosage for Water main Ductile Iron Pipe			
Pipe Size (Inches)	**Pipe Length (Feet)**	**# Of 5-g* calcium hypochlorite tablets required for a dose of 25 mg/L**	
4"	18'/20'	1	Tablet
6"	18'/20'	2	Tablet
8"	18'/20'	3	Tablets
10"	18'/20'	4	Tablets
12"	18'/20'	5	Tablets
16"	18'/20'	9	Tablets
18"	18'/20'	12	Tablets
20"	18'/20'	14	Tablets
24"	18'/20'	20	Tablets
36"	18'/20'	36	Tablets
*Based on 3.25 available chorine per tablet.			

B. Flushing of the Main

The entire water main or service line shall be flushed after the specified chlorine contact period. A minimum of 24 hours of contact time is required before flushing. The minimum contact time shall be 48 hours if the water temperature is less than 41 degrees F (5 degrees C). Flushing shall continue until the water is free from excess chlorine, with a free chlorine residual of 1mg/L. The entire line, including hydrants, leads, branch lines, and dead-end mains shall be flushed.

All flushing shall be performed by the contractor and witnessed by Shakopee Public Utilities personnel. The contractor shall be responsible for de-chlorination and disposing of the water from flushing safely and satisfactorily. Flushing water cannot be disposed of in sanitary sewer system.

C. Bacteriological Testing

Bacteriological sampling shall be done only after the pressure testing and the flushing of the water main, or services line has been completed. All disinfections and bacteriological sampling of water mains and service lines shall meet the requirements of the current edition of ANSI/AWWA Standards C651.

D. Sampling

It shall be the responsibility of the contractor installing the new water main or service line to have the bacteriological samples taken and analyzed by an independent laboratory, that is certified by the Minnesota Department of Health. This applies to all public and private water mains and water service lines. A copy of the sample results shall be sent to the SPU Water Department before any new water main or service line will be approved and released.

For new water mains and service lines, sets of samples shall be collected every 1,200 ft. of the new water main or water service line, plus one set from the end of the line and at least one from each branch greater than one pipe length.

Option B: After the flushing of the water main or service line, let it sit for 16 hours without any water use. Then collect, using the sample site procedures outlined and without flushing the main, two sets of samples a minimum of 15 minutes apart while the sample taps are left running. Both sets of samples must pass the water main or service line to be approved and released.

*If trench water has entered the water main or service line during construction or if excessive dirt or debris has entered the new main or service line, bacteriological samples shall be taken at intervals of approximately 200 ft., and the sampling locations shall be identified. Samples shall be taken of the water that has stood in the new water main for at least 16 hours after final flushing has been completed.

E. Re-disinfection

If the initial disinfection fails to produce satisfactory bacteriological results, or if other results are unacceptable water quality, the main or service line shall be re-flushed and resampled. If check samples fail to provide acceptable results, the main or service line shall be re-chlorinated by the continuous-feed or slug method until satisfactory results are obtained. When re-disinfection is deemed necessary, it will be done by the contractor with no additional compensation. All the chlorination methods must be in accordance with ANSI/AWWA C651.

F. Existing Water Mains

Where the existing water main is cut for the installation of any fittings, the pipe and fittings proposed to be installed shall be disinfected before installation as follows:

1. The interior of the pipe and fittings shall be cleaned of all dirt and foreign material.
2. The interior of the pipe and fittings shall be thoroughly swabbed or sprayed with one percent (1%) minimum hypochlorite solution.

2.21 Restoration of Surface Improvement (2621.3k)

The contractor shall confine the work within the construction limits as specified. In all instances, restoration of any disturbed area outside the construction limits shall be at the expense of the contractor.

Wherever any surface improvements such as pavement, curbing, pedestrian walks, fencing, or turf have been removed, damaged, or otherwise disturbed by the Contractor's operations, they shall be repaired or replaced to the Engineer's satisfaction and will restore the improvement in kind and structure to the preexisting condition. Each item of restoration work shall be done as soon as practicable after completion of installation and backfilling operations on each section of the pipeline.

In the absence of specific payment provisions, as separate contract items, the restoration work shall be compensated for as part of the work required under those contract items which necessitated the destruction and replacement of the repair, and there will be no separate payment. If separate pay items are provided for restoration work, only that portion of the repair or reconstruction which was necessitated by the contract work will be measured for payment. Any improvements removed or damaged unnecessarily or undermined shall be replaced or repaired at the contractors' expense.

Portions of the existing roadway and curb and gutter that is disturbed by constructing shall be replaced in accordance with the City of Shakopee Standard Specifications for street construction. The materials shall be placed on thoroughly compacted subgrade. The trench shall be compacted in lifts not to exceed one foot (1').

2.22 Operational Inspection (2611.3H)

At the completion of the project and in the presence of the inspector, the contractor shall operate all valves, hydrants, and water services to ascertain that the entire facility is in good working order, that all valve boxes are centered, and valves are opened; that all hydrants operate and drain properly; and that all curb boxes are plumb and centered; and that water is available at all curbs stops. All curb stops shall be operated / "sizzled" by the contractor after installation and prior to performing the leakage test. A Shakopee Public Utilities representative shall witness each curb stop operated.

2.23 Leakage/Hydrostatic Test

Prior to testing all storm and sanitary sewers must be installed. At the completion of the operational inspection, each line section shall be tested at a minimum 150 psi (200 psi for combined domestic/fire or fire lines) for no less than two (2) hours and will be accepted if the leakage does not exceed the quantity determined by the formula below:

$$L = \frac{ND\sqrt{P}}{7{,}400}$$

Where: L = Maximum permissible leakage (gallons per hour)
N = Number of joints in the length of pipe tested
D = Nominal diameter of pipe (inches)
P = Average test pressure (pounds per square inch, gauge)

Minimum and typical testing is from valve to valve. The contractor shall supply the pump and any material and labor needed to perform the leakage test. The contractor will supply the pressure gauge used for the test. The leakage test is to be witnessed by SPU Personnel or SPU Representative.

2.24 Conductivity Test (2611.3F)

Conductivity testing, for the verification of pipe locating capabilities, shall take place before the completion of the project. The contractor shall schedule with SPU to witness the field locating of all placed mains, leads, and stubs. If any sections of the pipe are not traceable, then the contractor shall be required to make necessary repairs until a passing conductivity test takes place. Conductivity testing shall be completed by using typical low-frequency line tracing equipment that is approved by SPU.

2.25 Methods of Measurements and Payment (2611.5)

A. Foundation Materials

Foundation materials shall be considered incidental to the project unless a pay item is included in the Bid Schedule.

If there is a Bid item, material used for refilling the pipe foundation grade to assure firm foundation for pipe shall be paid for at the contract unit price per measured

cubic yard volume in place. Payment shall be made only for the width of trench and shall not exceed the quantity of material used within the maximum allowable width of trench multiplied by the depth below the bottom of the pipe. Payment shall include cost of excavation, delivery, placement, and compaction.

No measurements or payment will be made for foundation materials required due to over-excavation of suitable material by the contractor. Foundation materials used to correct over-excavation shall be considered incidental to the project.

B. Base Material and Surfacing

The payment shall be by the unit price bid per ton for each type of aggregate. Payment shall include furnishing, placement, compaction, grading and tolerancing the base material.

C. Street Patching and Replacement of Curb and Gutter

Payment for furnishing, placing and shaping the patching shall be paid at the unit price per square yard or portion as specified in the proposal for each location.

Payment for furnishing and placing the curb and gutter shall be at the unit price per lineal foot measured along the face of the curb and gutter lines.

D. Air Release Valve Assembly

Air Release valve assemblies shall be measured by the number of each type installed complete, including all valves and vented vault and accessories, as specified. The quantity measure shall be paid for at the contract unit price per each.

E. Blowoff Valve Assembly

Blowoff valve assemblies shall be measured by the number of each type installed complete including line tee, blowoff line, valve, vault and accessories, as specified. The quantity measured shall be paid for at the contract unit price per each.

F. Hydrant Assembly

Hydrant assembly shall be measured by the number of each installed complete including joint restraints, drainage pit, etc., as specified. The quantity measured shall be paid for at the contract until price per each. Hydrant valves as six inches (6”) water main is paid under a separate bid item.

G. Gate Valves

Gate valves shall be measured by the number of each size installed including valve bedding, valve, valve box and cover, extensions sections as required, fittings, installation, placing and compacting backfill, and associated work as specified. The quantity measured shall be paid for at the contract unit price for each size of valve with the box installed.

H. Butterfly Valve with Manhole

Butterfly valves shall be measured by the number of each size installed complete including all valves, manhole and accessories as specified on plan and details. The quantity measured shall be paid for at the contract unit price.

I. Ductile Iron Pipe (DIP)

DIP shall be measured by the lineal foot of each size installed including excavating, temporary sheeting/shoring, temporary support of existing utilities, dewatering, water main pipe, handling, laying, joint restraints, polyethylene encasement as required, maintaining water service to users, testing, disinfecting, placing and compacting backfill, as specified. The quantity measured shall be paid for at the contract unit price with no deductions for valves or fittings. Fittings shall be paid for under a separate bid item.

J. Water Main Fittings

Water main fittings shall be measured for payment purposes only based upon the unit price per pound for the standard weight of the fitting in accordance with ASNI/AWWA C10/A21.65-83 Class 350 D.I.P. body weight only including furnishing all materials, equipment, tools and labor necessary to complete the work as specified. The quantity measured shall be paid for at the contract unit price. Weights shall not include nuts, bolts, megalug or other miscellaneous materials.

K. Water Services

Water services shall be measured by the lineal foot for each size installed including excavation, service line pipe, handling laying, testing, disinfection, placing and compacting backfill and related construction as specified. The quantity measure shall be paid for at the contract unit price. Corporation and curb stop valves and boxes shall be paid for under a separate bid item.

L. Corporation Stop

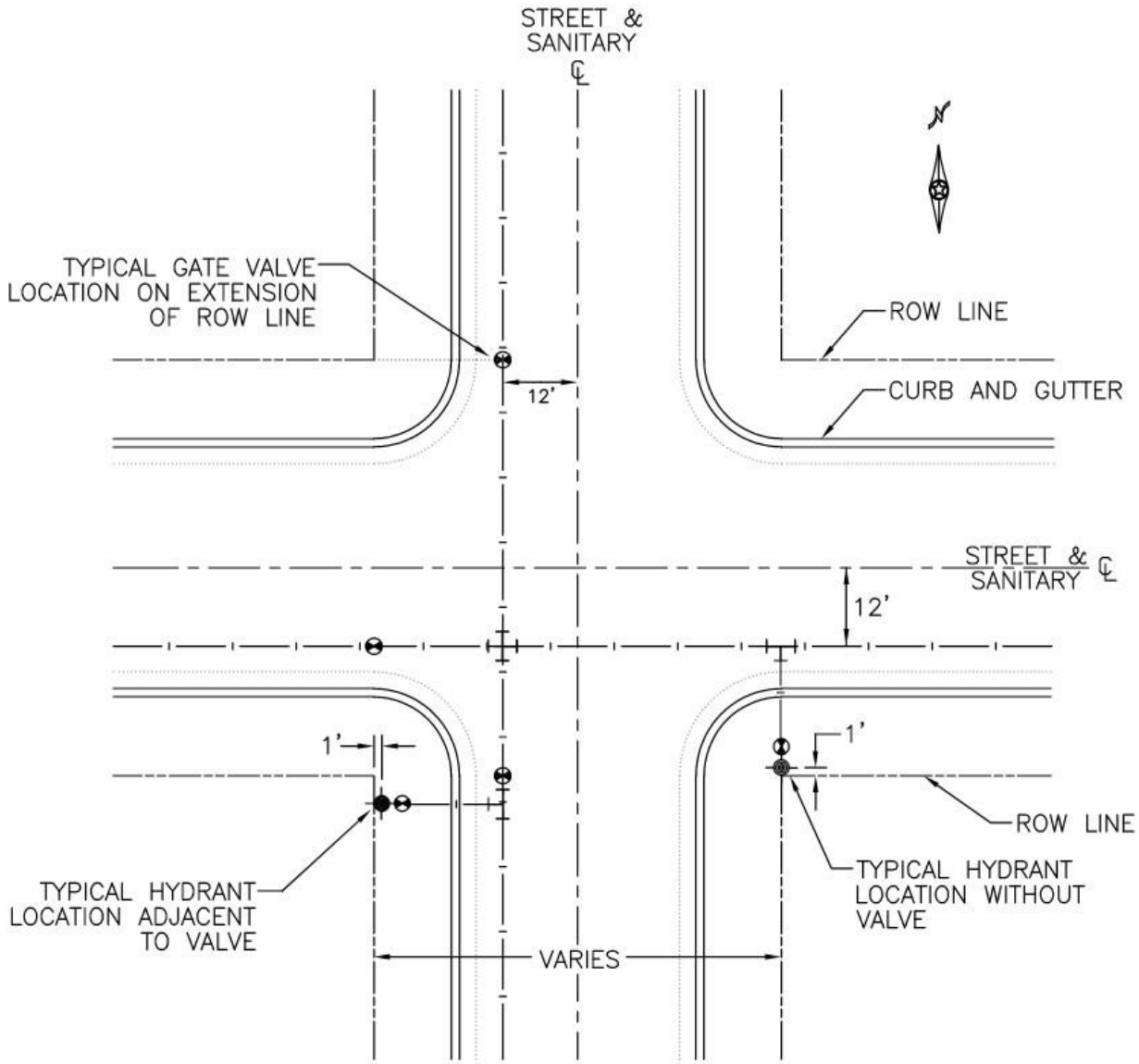
Corporation stops shall be measured by each size installed including furnishing all materials, equipment, tools, and labor necessary to complete the work as specified. The quantity measured shall be paid for at the contract unit price.

M. Curb Stop Valve and Box

Curb stop valves shall be measured by each size installed including the curb stop valve box and cover, extension sections, and associated work as specified. The quantity measured shall be paid for at the contract unit price.

C.

Detail Plates	Adoption Date	
WAT – 001	1/5/26	Typical Locations for Watermain at Intersections
WAT – 002	1/5/26	Standard Valve Box Installation
WAT – 003	1/5/26	Typical Water Service Connection
WAT – 004	1/5/26	Standard Valve Manhole
WAT – 005	1/5/26	Air Release Assembly
WAT – 006	1/5/26	Air Release Valve Manhole
WAT – 007	1/5/26	Thrust Restraints for Bends, Tees, and Plugs
WAT – 008	1/5/26	Standard Hydrant Installation
WAT – 009	1/5/26	Temporary 2” Blowoff Assembly
WAT – 010	1/5/26	6” Blowoff Assembly
WAT – 011	1/5/26	Water Meter Installation for Commercial and Industrial Installations
WAT – 012	1/5/26	Watermain Offset Detail
WAT – 013	1/5/26	Jacking Detail (Single Pipe Crossing)
WAT – 014	1/5/26	Steel Watermain Casing Detail
WAT – 015	1/5/26	Irrigation Connection Metering Cabinet and Blowout
WAT – 016	1/5/26	Plan Approval Signature Block
WAT – 017	1/5/26	Record Plans Signature Block
WAT – 018	1/5/26	Watermain Laying Condition Trench Type 3
WAT – 019	1/5/26	Joint Trench for Watermain & Sanitary Sewer
WAT – 020	1/5/26	Retire Water Service (for sizes up to 1.5” copper service)
WAT – 021	1/5/26	Retire D.I.P./C.I.P. Water Service (for 4” to 16” services)
WAT – 022	1/5/26	Double Check Detector Assemblies
WAT – 023	1/5/26	Typical Residential Installation for Sprinkled Dwellings
WAT – 024	1/5/26	Typical Residential Water Meter w/Booster Pump
WAT – 025		Typical Residential Water Meter Installation
WAT – 026	1/5/26	Typical Residential Water Service Connection with Cooper Pipe Only
WAT – 027	1/5/26	Typical Residential Water Service Connection with HDPE Pipe Curb Stop to Building Only
WAT – 028	1/5/26	3” and Larger Fire and/or Domestic Riser Systems
WAT – 029	1/5/26	Double Check Installation with Heated Enclosure
WAT – 030	1/5/26	V-Bio Enhanced Polyethylene Wrap Tubing



NOTE:

1) WATERMAINS ARE TYPICALLY INSTALLED ON THE WEST OR SOUTH SIDE OF CENTERLINE AND SANITARY SEWER MAINS
2) WHERE VERTICAL SEPARATION BETWEEN WATERMAIN & SANITARY IS LESS THAN 18" HORIZONTAL SEPARATION SHALL BE MINIMUM 10' OUTSIDE EDGE TO OUTSIDE EDGE
3) THERE SHALL BE THREE GATE VALVES LOCATED NEAR A CROSS AND TWO GATE VALVES LOCATED NEAR A TEE.

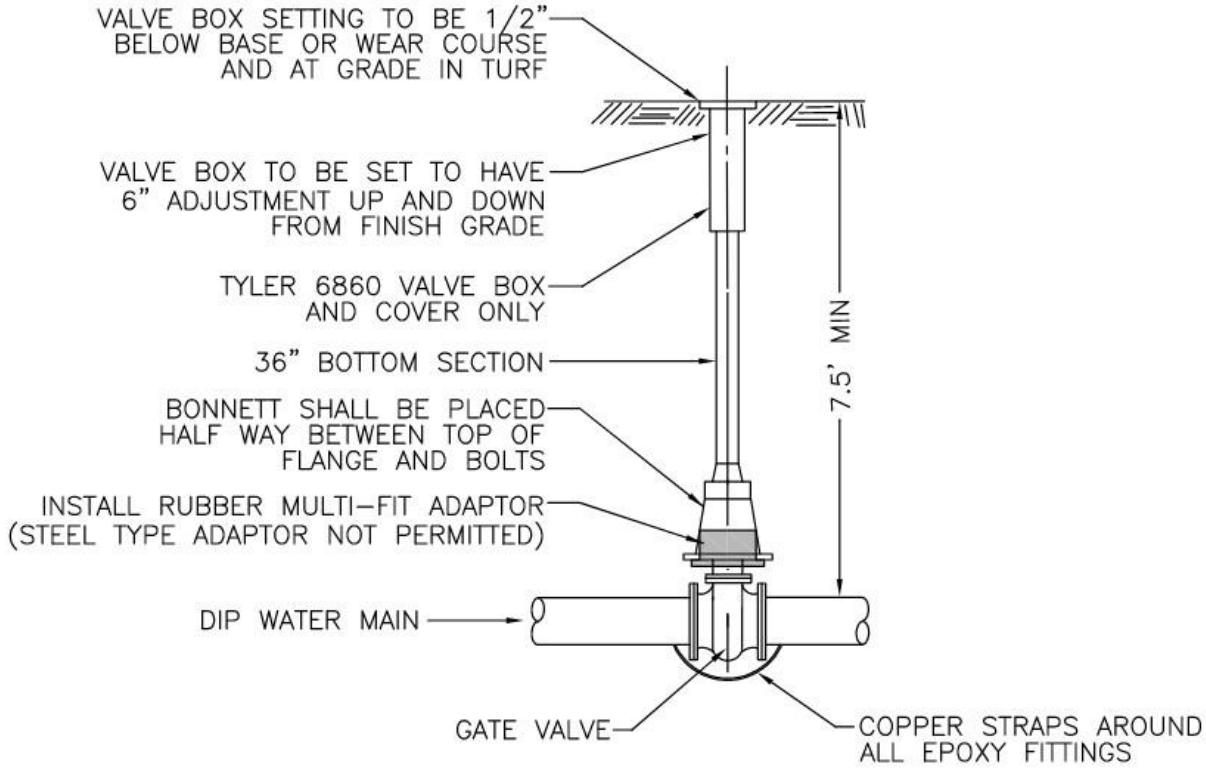
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

TYPICAL LOCATIONS FOR WATERMAIN AT INTERSECTIONS

SPU Shakopee Public Utilities

WAT – 001

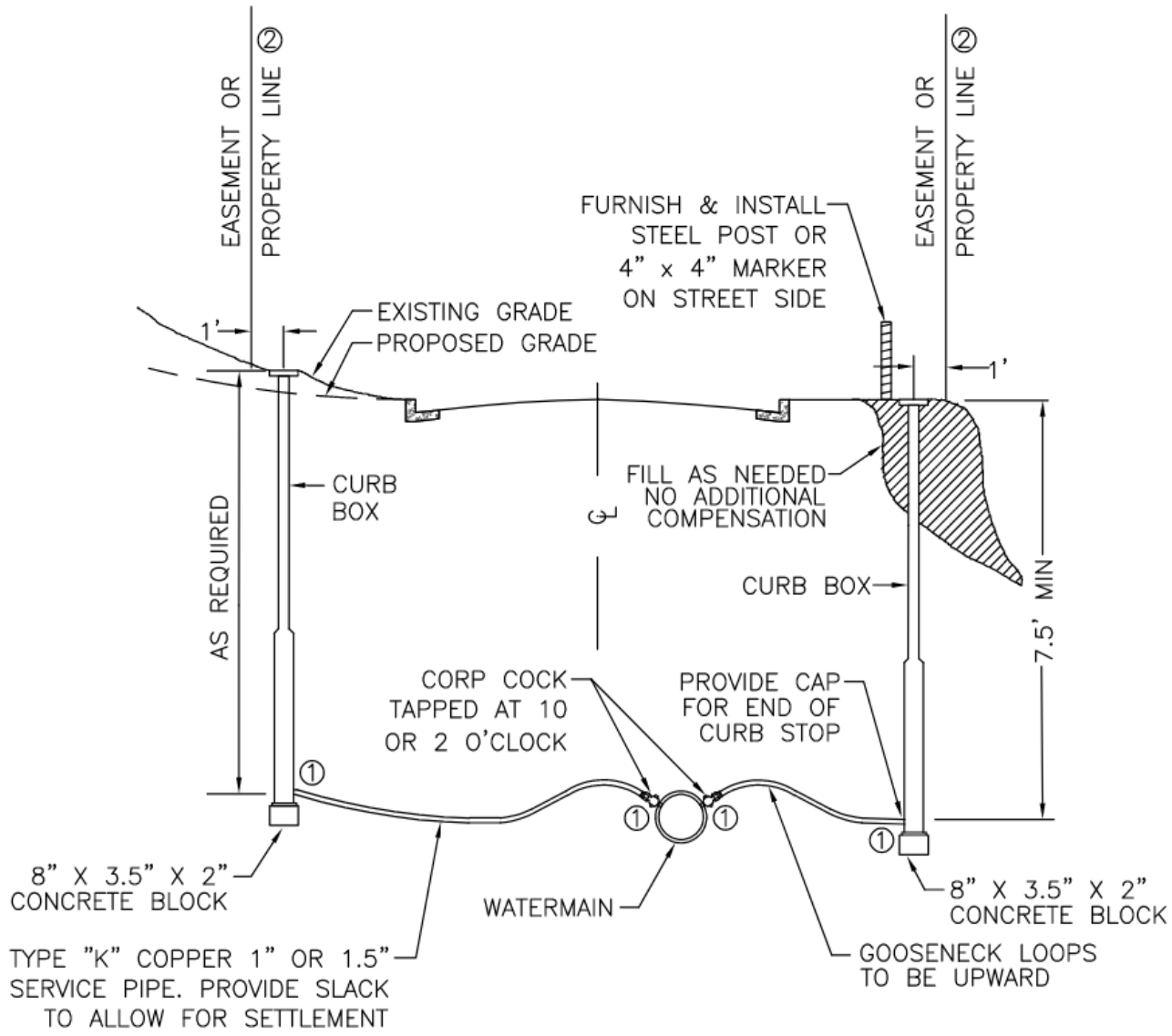


NOTES:

1) VALVE BOX SHALL BE CENTERED ON OPERATING NUTS. STRAIGHT, FREE FROM DEBRIS, AND ALL SECTIONS UNBROKEN.
2) VALVES IN EASEMENTS SHALL HAVE CHANNEL POST WITNESS MARKERS WITH REFLECTIVE "G.V." SIGN.
3) DEEP VALVES SHALL HAVE NUT EXTENSIONS INSTALLED TO ELEVATION TO ACCOMMODATE STANDARD 10' KEY. BOTTOM NUT SHALL BE BOLTED TO VALVE NUT AND ONLY ONE SECTION.
4) COMPACTION WITH MECHANICAL TAMPER AROUND VALVE BOX SHALL BE PLACED AND COMPACTED WITH 2' LIFTS TO ACHIEVE 95% COMPACTION BELOW 3-FT FROM GRADE AND 100% COMPACTION IN THE TOP 3-FT FROM GRADE.

NOT TO SCALE

ADOPTED BY	REVISIONS		STANDARD VALVE BOX INSTALLATION	SPU Shakopee Public Utilities
RESOLUTION	DATE	BY		
#2026-01				WAT – 002
1/5/26				



NOTE:

1) ALL CONNECTIONS ON FITTINGS SHALL BE COMPRESSION STYLE. FLARED FITTINGS ARE NOT ALLOWED ON COPPER PIPE.
2) CURB BOX INSTALLED 1–FT INSIDE ROW NORTH OF HWY 169. CURB BOX INSTALLED 1–FT INSIDE D&U EASEMENT SOUTH OF HWY 169.
3) CURB BOXES INSTALLED IN AREAS WHERE BOULEVARD IS TO BE CUT AT A LATER DATE SHALL BE INSTALLED AT DEPTH REQUIRED. CURB BOX EXTENSION FOR BOXES EXCEEDING 7.5' IN LENGTH ARE TO BE BID AT CONTRACT UNIT PRICE AND SHALL NCLUDE STACK COUPLINGS, CONNECTIONS, ETC.

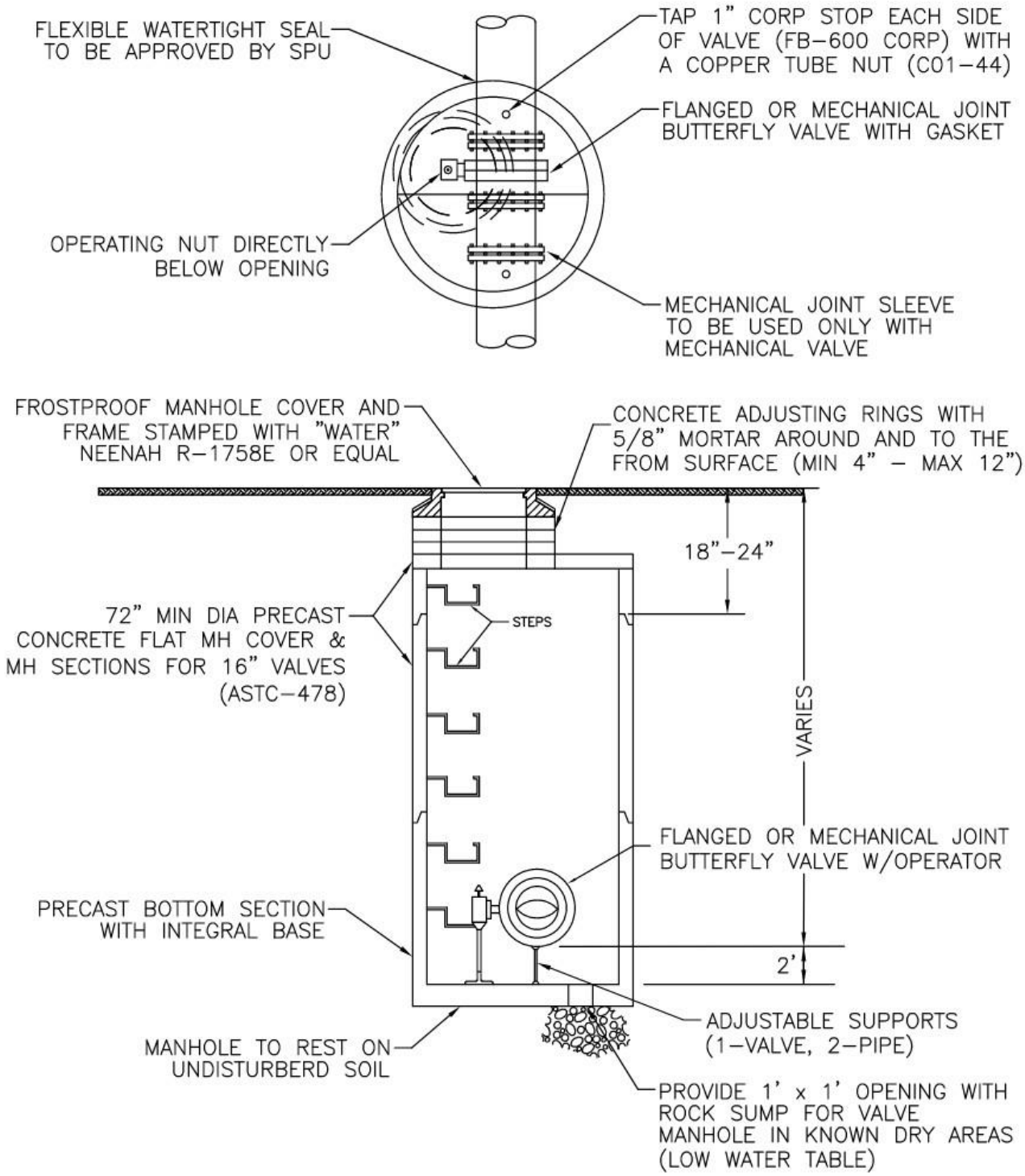
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

TYPICAL WATER SERVICE CONNECTION

SPU Shakopee Public Utilities

WAT – 003



NOTE:

1) DEEP VALVES SHALL HAVE NUT EXTENSIONS INSTALLED TO ACCOMMODATE STANDARD 10' KEY. BOTTOM NUT SHALL BE BOLTED TO VALVE NUT AND ONLY ONE SECTION. EXTENSION GUIDE(S) MAY BE REQUIRED DEPENDING ON DEPTH.

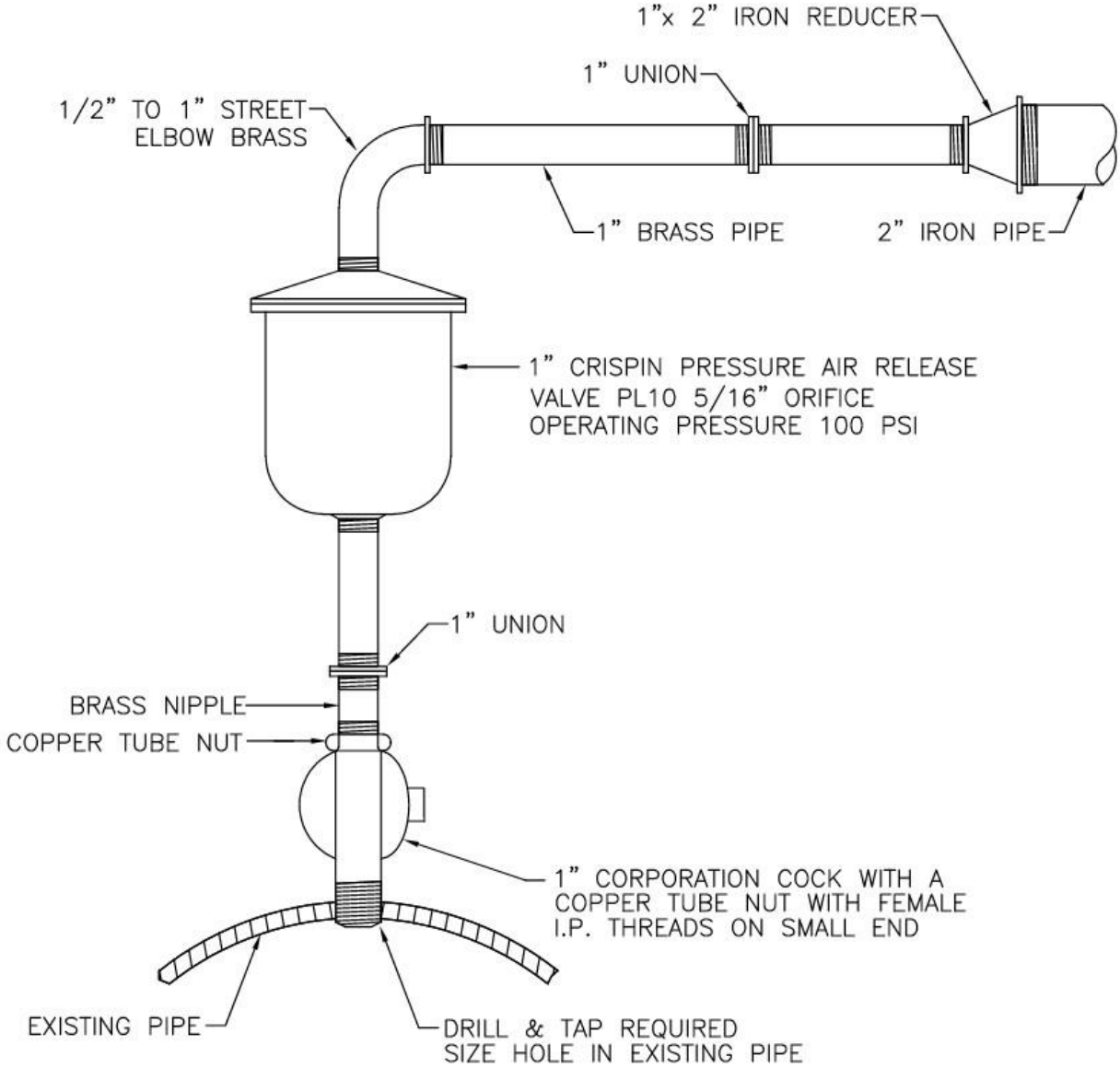
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

STANDARD VALVE MANHOLE

SPU Shakopee Public Utilities

WAT - 004



NOTE:

1) BRASS NIPPLES ARE TO BE KEPT AS SHORT AS POSSIBLE TO KEEP OVERALL HEIGHT TO A MINIMUM
2) ALL 1" PIPE AND FITTINGS SHALL BE BRASS

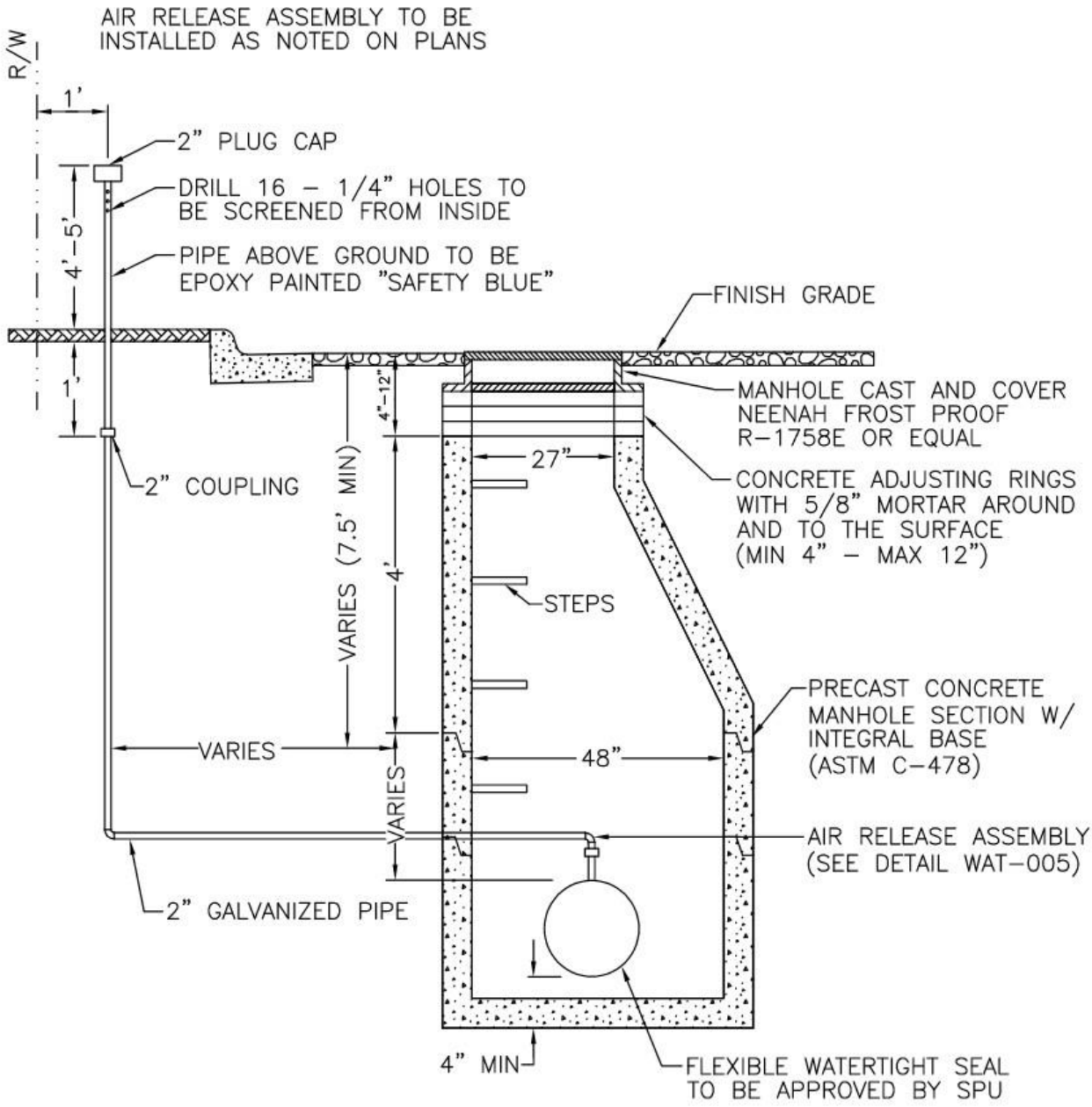
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

AIR RELEASE ASSEMBLY

SPU Shakopee Public Utilities

WAT – 005



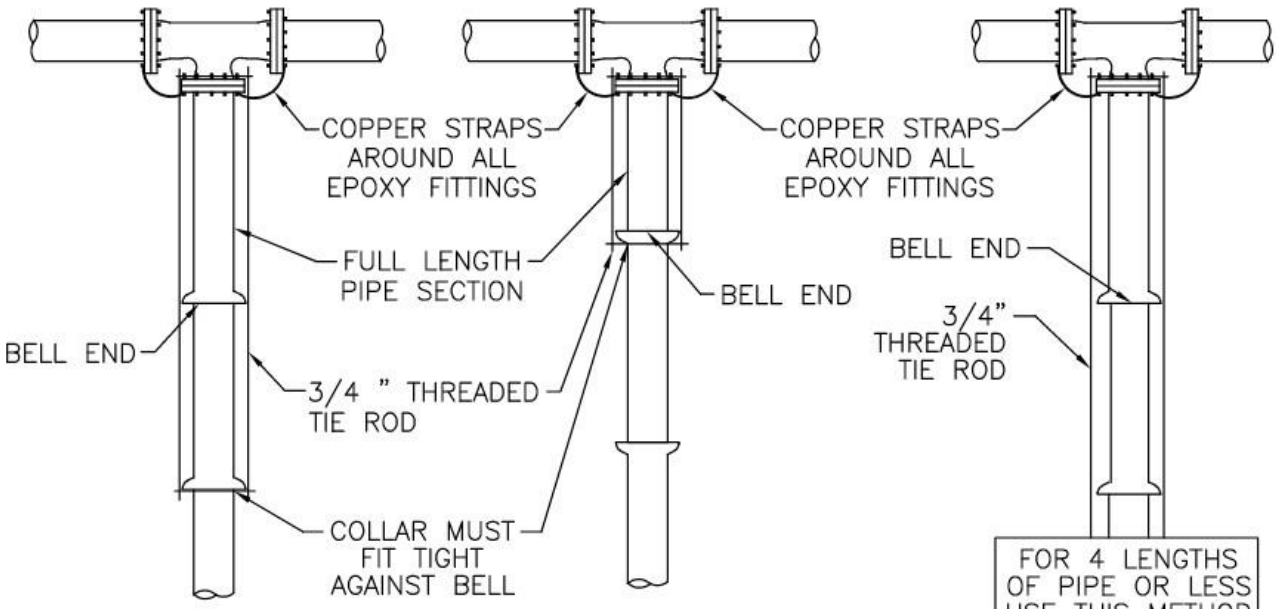
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

AIR RELEASE VALVE MANHOLE

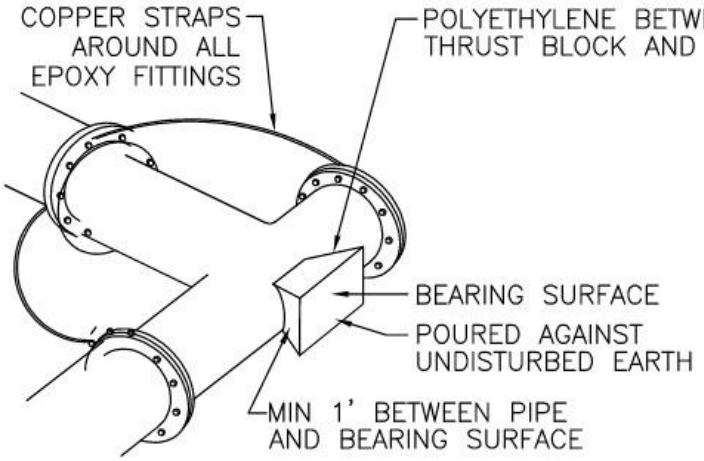
SPU Shakopee Public Utilities

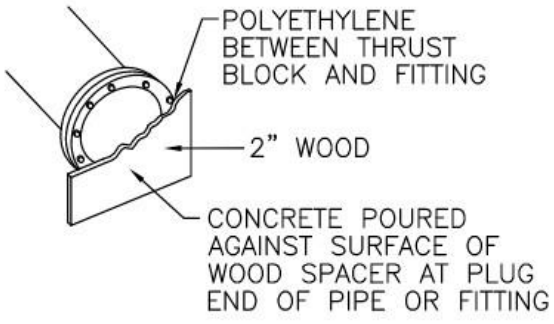
WAT – 006



THRUST BLOCK SHALL BE READY MIX CONCRETE MEETING MNDOT SPEC 2461

PIPE SIZE (IN)	6	8	12	16	18
BEARING AREA (SF)	2.5	4	9	16	19.5





NOTE:

1) EBAA IRON MEGALUGS CAN BE USED AS AN ALTERNATIVE TO TIED PIPES W/POURED CONCRETE THRUST BLOCKS, MAINTAIN 2 LENGHTS OF RESTRAINED PIPE.
2) EYE BOLTS ONLY WITH WASHERS IF RODDING USED. ALL METAL SHALL BE COATED WITH COLD TAR EPOXY.
3) THRUST BLOCK TO BE USED FOR BENDS 22.5° AND OVER RESTRAINING NOT REQUIRED FOR 11.25° BENDS. 90° BENDS ARE NOT ALLOWED.

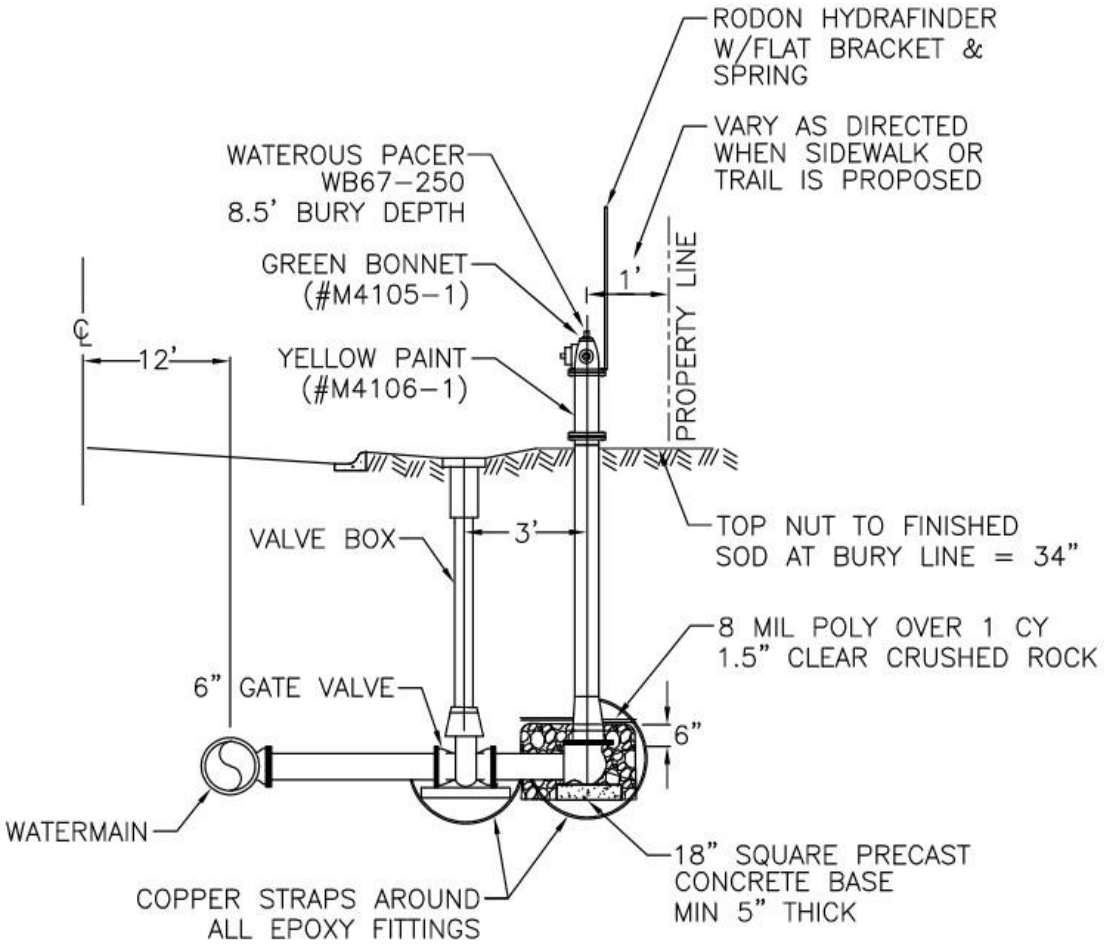
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

THRUST RESTRAINTS FOR BENDS, TEES AND PLUGS

SPU Shakopee Public Utilities

WAT – 007



NOTE:

1) EBAA IRON MEGALUG ALL JOINTS ON HYDRANT TEE THRU TO HYDRANT
2) HYDRANT TO HAVE NATIONAL STANDARD SCREW THREADS FOR FIRE HOSE COUPLING AND FITTINGS–ALL VALVES TO OPEN COUNTER–CLOCKWISE
3) FURNISH & INSTALL RODON HYDRAFINDER MARKER ON EACH HYDRANT
4) PROVIDE SPU WATER OPERATOR (1) EXTRA RODON HYDRAFINDER MARKER FOR EACH HYDRANT INSTALLED.

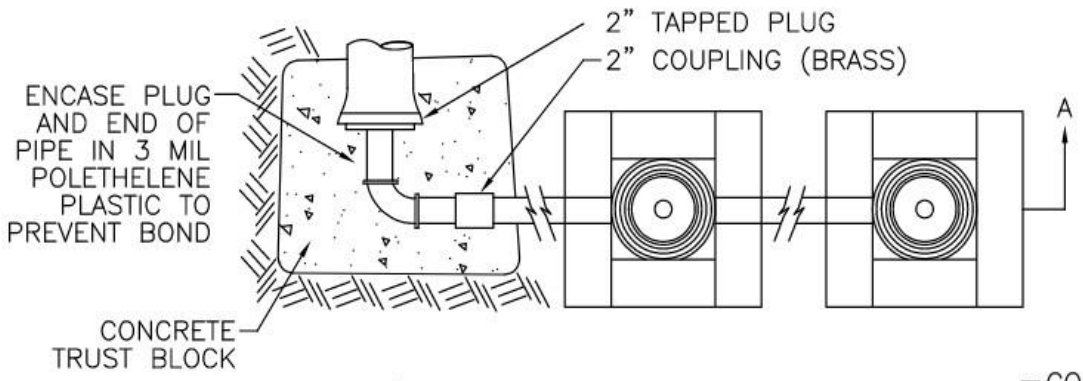
NOT TO SCALE

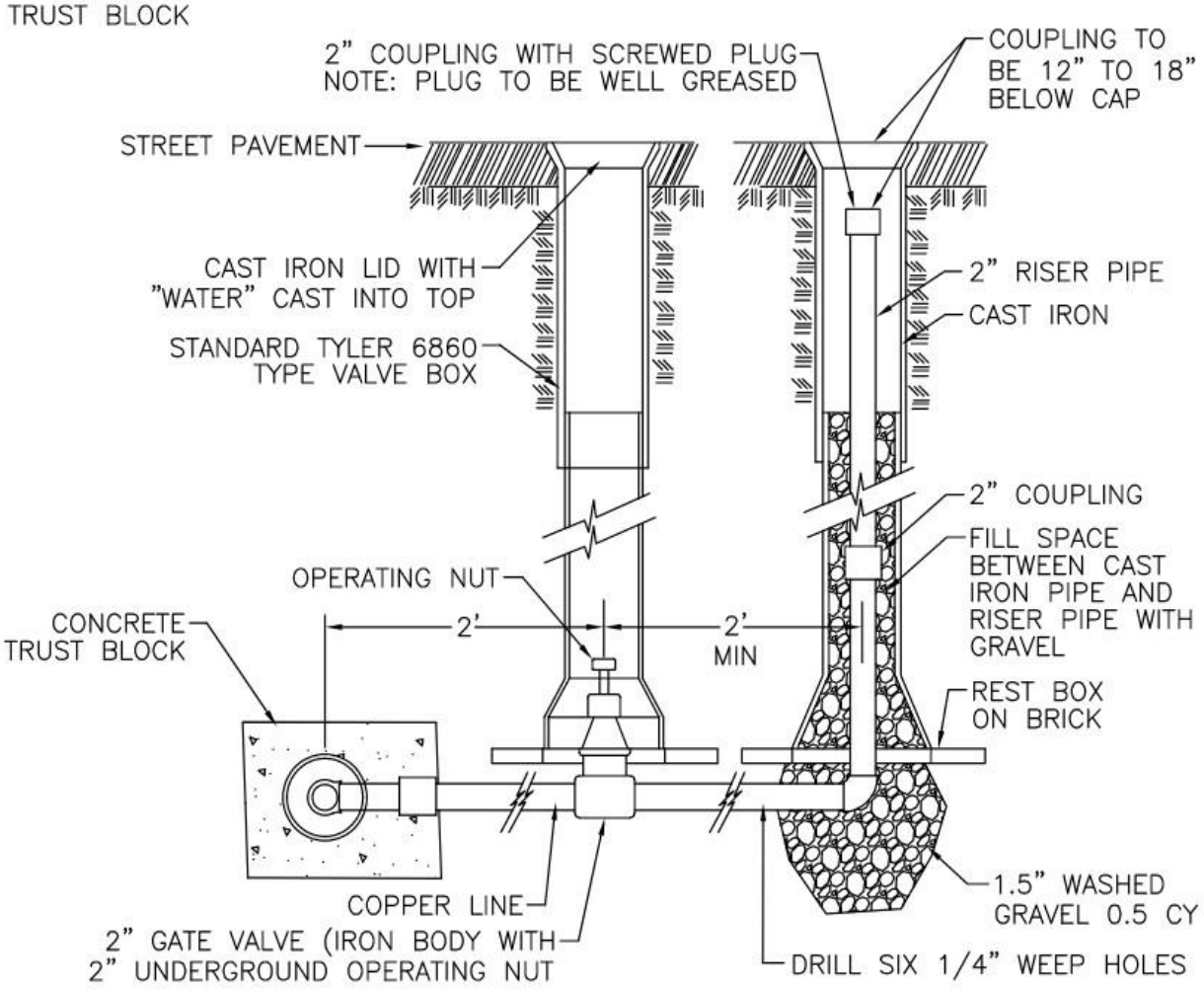
ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

STANDARD HYDRANT INSTALLATION

SPU Shakopee Public Utilities

WAT – 008





NOTE:

1) ALL 2" PIPE AND FITTINGS FROM THE PLUG TO THE VALVE SHALL BE THREADED BRASS
2) ALL 2" PIPE FITTINGS FROM THE VALVE TO THE ROAD LEVEL SHALL BE THREADED GALVANIZED STEEL
3) BACKFILL AROUND BOTH BOXES SHALL BE ROAD BASE COMPACTED TO 95% PER AASHO TI80 METHOD B

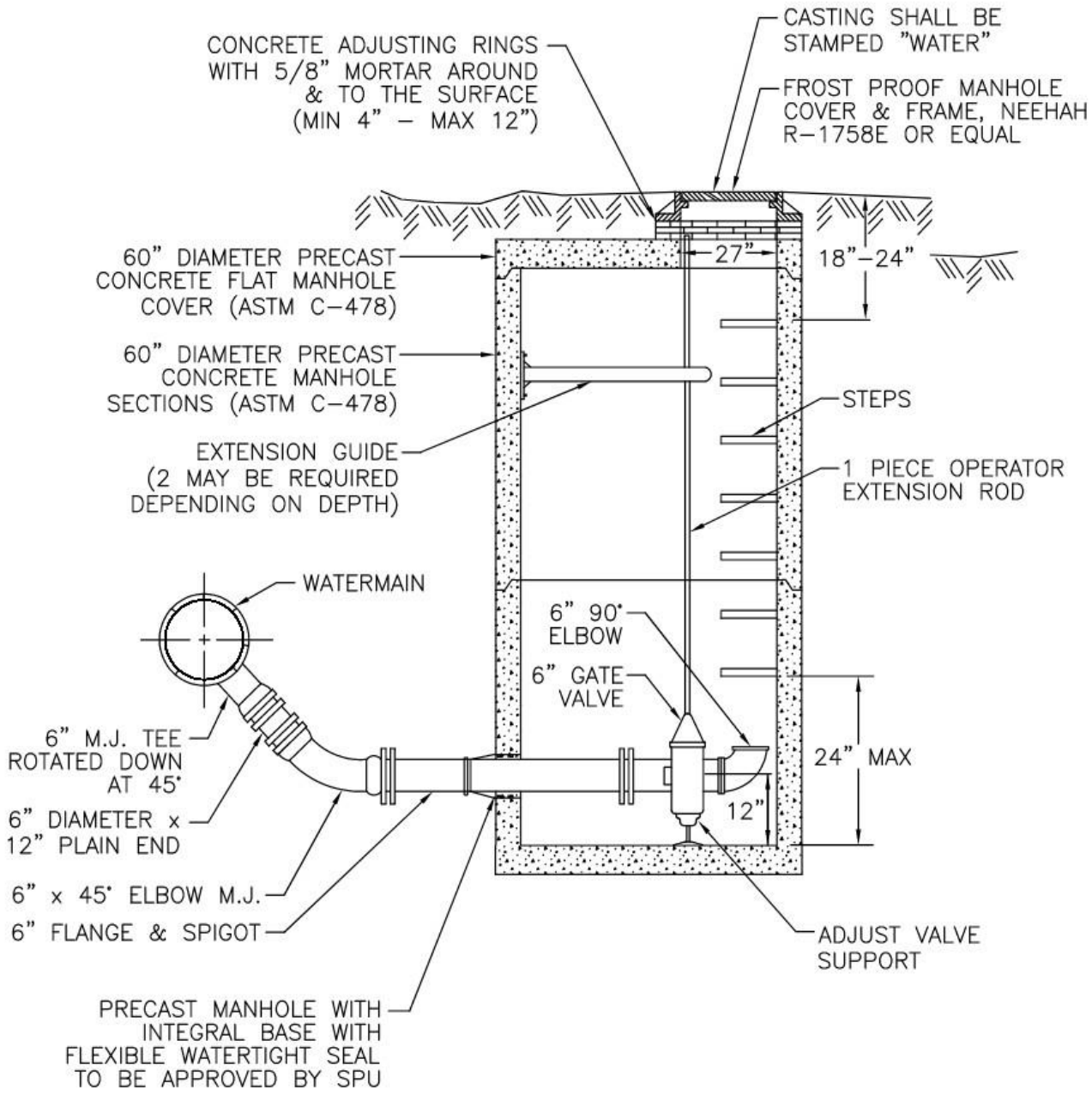
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

TEMPORARY 2" BLOWOFF ASSEMBLY

SPU Shakopee Public Utilities

WAT – 009



NOTE:

1) USE MEGALUGS ON ALL JOINTS
2) INSTALL COPPER STRAPS AROUND ALL EPOXY FITTINGS

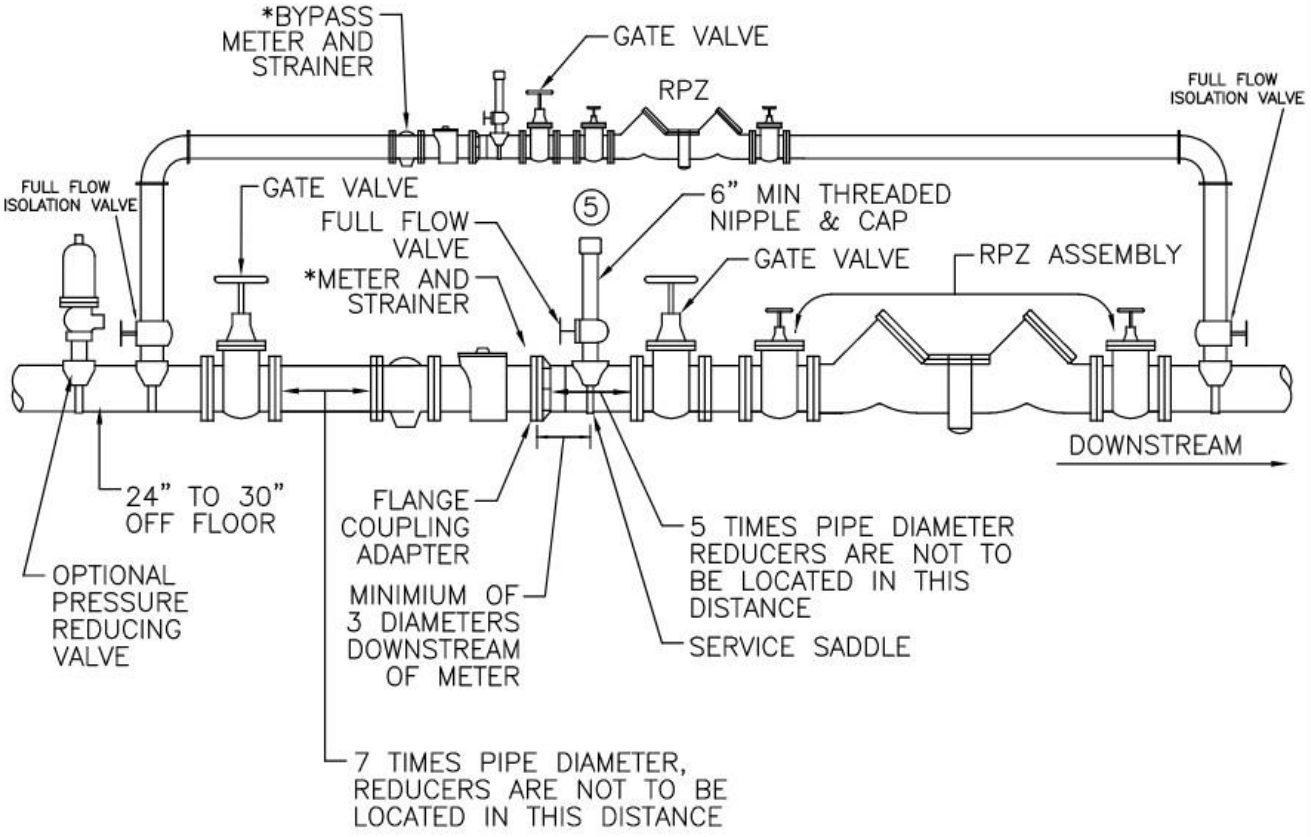
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

6" BLOWOFF ASSEMBLY

SPU Shakopee Public Utilities

WAT – 010



NOTE:

1) BYPASS PIPING, METER, AND RPZ ARE OPTIONAL.
2) THERE IS A WATER METER FEE BASED ON ITS SIZE.
3) WATER METERS ARE TO BE SIZED BY SHAKOPEE PUBLIC UTILITIES. 1.5–INCH AND LARGER METERS INCLUDE THE STRAINER.
4) WATER METERS REMAIN THE PROPERTY OF SHAKOPEE PUBLIC UTILITIES.
5) METER TEST OUTLET NOT REQUIRED FOR 1" METER OR SMALLER PIPE SIZE,
   1.5" OUTLET FOR 1.5" OR 2" METER PIPE SIZE
   2" OUTLET FOR 3" AND 4" METER PIPE SIZE
   3" OUTLET FOR 6" AND LARGER METERS

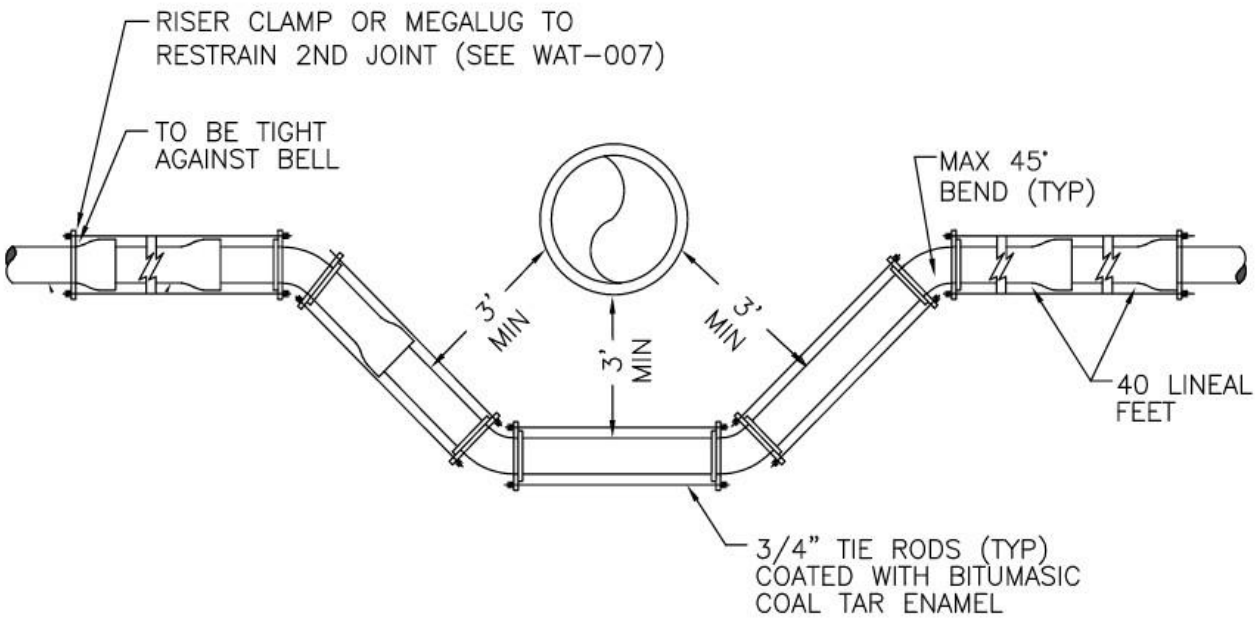
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

WATER METER INSTALLATION FOR COMMERCIAL AND INDUSTRIAL INSTALLATIONS

SPU Shakopee Public Utilities

WAT – 011

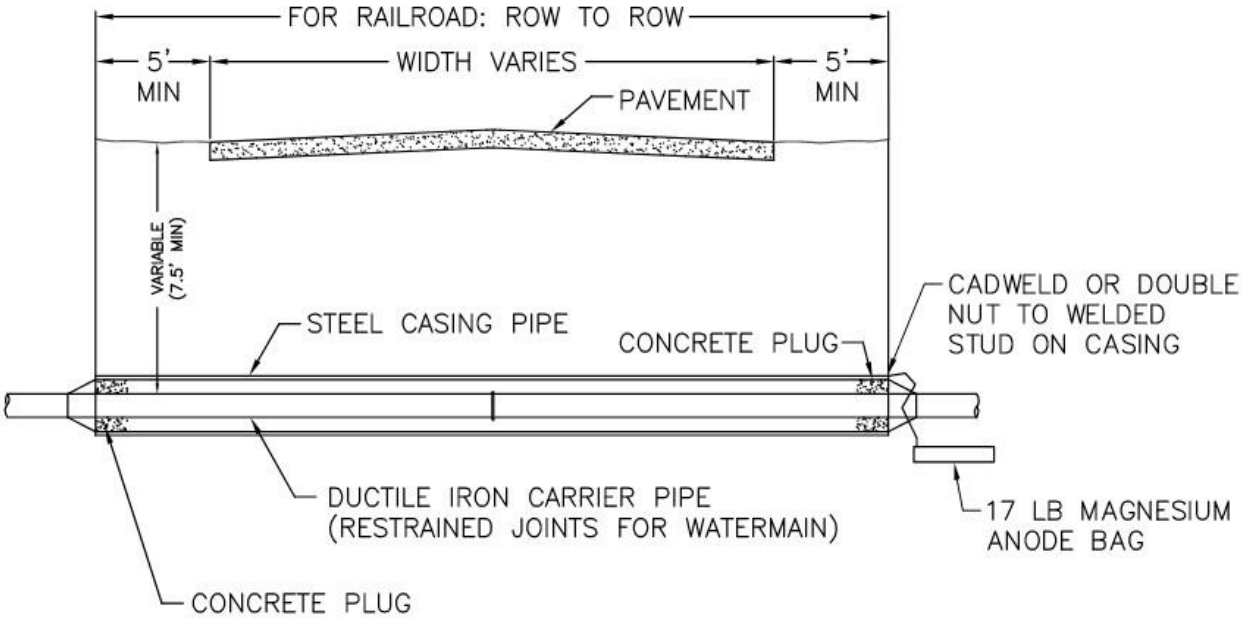


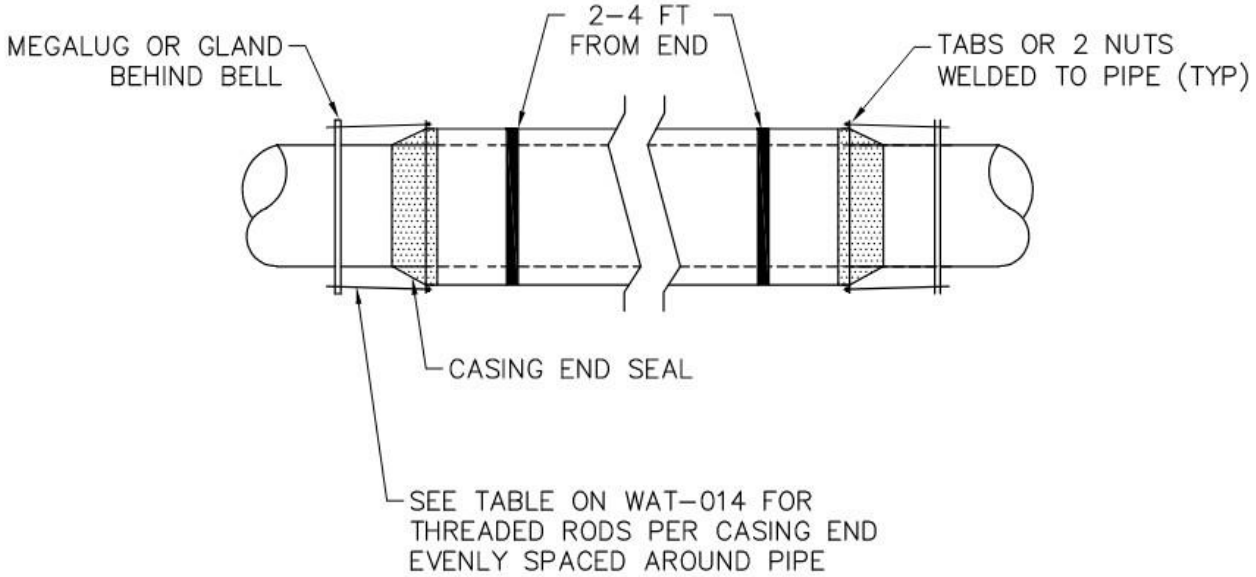
NOTE:

1) 6–INCH TO 10–INCH DIAMETER PIPE SHALL HAVE 2 RODS
2) 12–INCH DIAMETER & LARGER PIPE SHALL HAVE 4 RODS
3) MEGALUGS MAY BE USED IN LIEU OF RODS (SEE WAT–007)
4) COPPER STRAPS SHALL BE INSTALLED AROUND ALL EPOXY FITTINGS

NOT TO SCALE

ADOPTED BY	REVISIONS		WATERMAIN OFFSET	SPU Shakopee Public Utilities
RESOLUTION	DATE	BY		
#2026–01				WAT – 012
1/5/26				





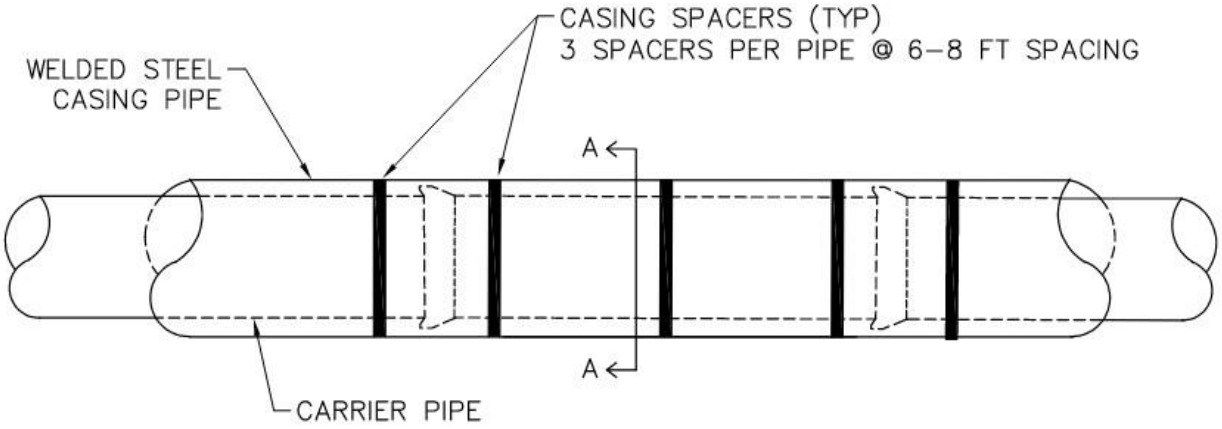
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

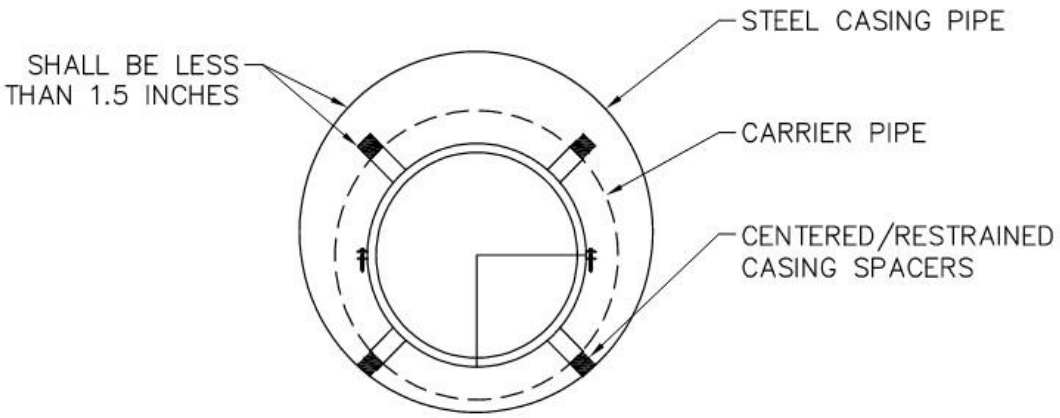
JACKING DETAIL (SINGLE PIPE CROSSING)

SPU Shakopee Public Utilities

WAT – 013



SECTION A–A



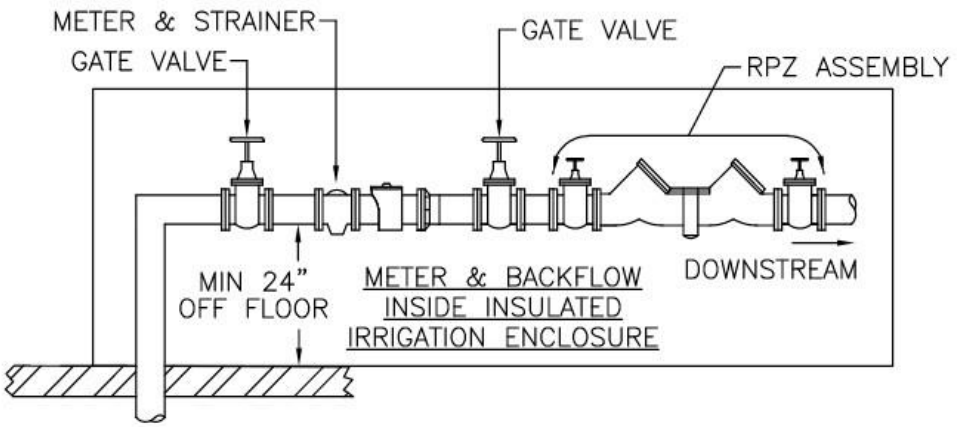
PIPE SIZING CHART				
NOMINAL CARRIER PIPE DIA (IN)	OUTER CARRIER PIPE DIA (IN)	CASING SIZE (IN)	WALL THICKNESS (IN)	# OF RODS REQUIRED
6	6.9	14	0.188	2
8	9.05	16	0.281	2
10	11.1	18	0.312	2
12	13.2	20	0.344	2
14	15.3	22	0.344	2
16	17.4	24	0.375	3
18	19.5	26	0.406	3

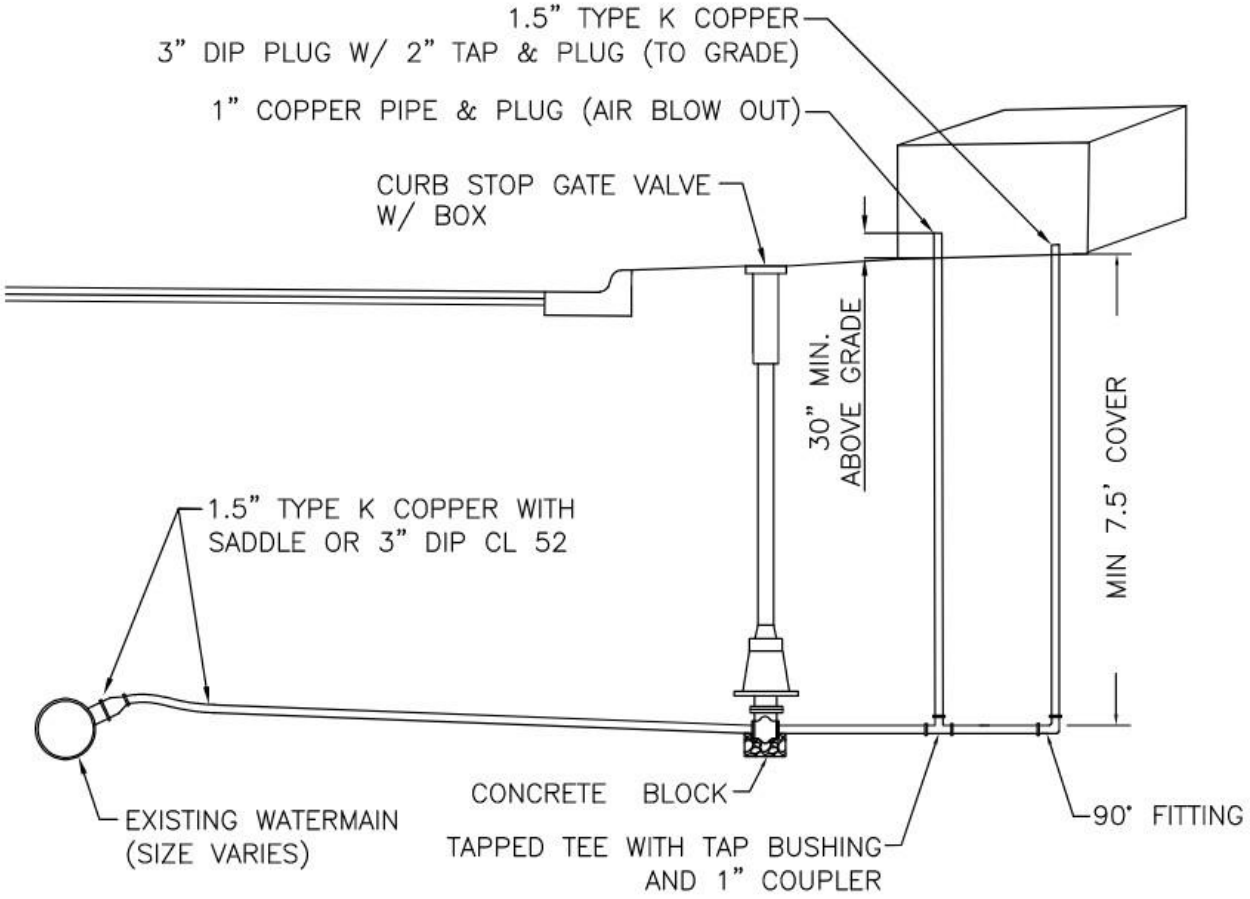
ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

STEEL WATERMAIN CASING

SPU Shakopee Public Utilities

WAT – 014





NOTE:

1) AN SPU APPROVED METERING CABINET SHALL BE PROVIDED TO INSULATED THE PIPES
2) ALL COMMUNITY IRRIGATION SYSTEMS REQUIRE COVERS ON METERING CABINET (DOGHOUSE STYLE) AND HAVE INSTALLED HYDRAULIC LIFT ARMS.
3) OWNER MUST PROVIDE SPU STAFF A KEY FOR ACCESS TO THE METERING CABINET

NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

IRRIGATION CONNECTION METERING CABINET AND BLOWOUT

SPU Shakopee Public Utilities

WAT – 015

APPROVED FOR ONE YEAR FROM THIS DATE

ALL MATERIALS AND CONSTRUCTION METHODS SHALL COMPLY WITH SHAKOPEE PUBLIC UTILITIES WATER POLICY MANUAL DATED 1/5/2026

SHAKOPEE PUBLIC UTILITIES _____ DATE _____

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

PLAN APPROVAL SIGNATURE BLOCK

SPU Shakopee Public Utilities

WAT – 016

RECORD PLANS ACCEPTED

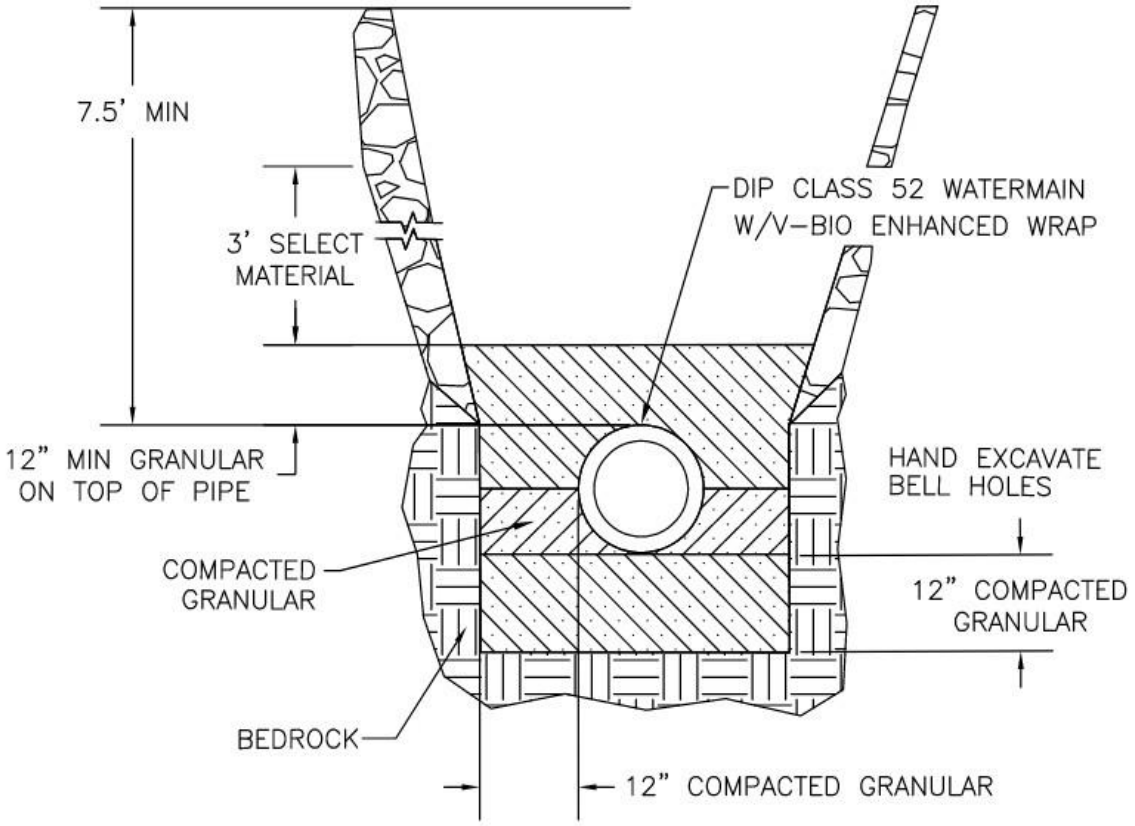
SHAKOPEE PUBLIC UTILITIES _____ DATE _____

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

RECORD PLANS SIGNATURE BLOCK

SPU Shakopee Public Utilities

WAT – 017



NOTE:

1) PAY LIMITS SHALL BE MEASURED FROM THE TOP OF SOLID BEDROCK AND EXTEND TO ONE FOOT ON EACH SIDE OF THE WATERMAIN PIPE, REGARDLESS OF DEPTH.

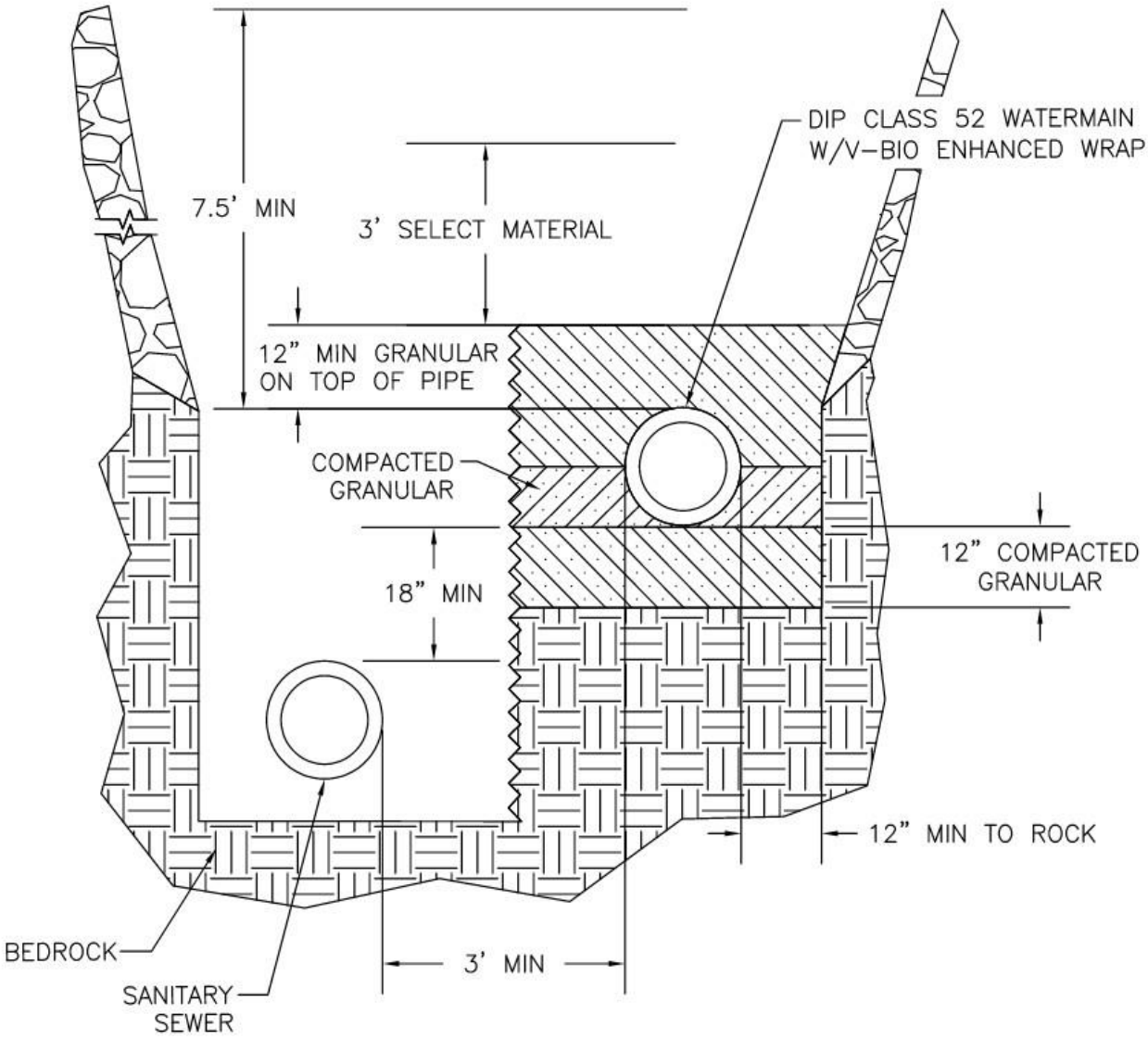
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

WATERMAIN LAYING CONDITION TRENCH TYPE 3

SPU Shakopee Public Utilities

WAT – 018



NOTE:

1) WATERMAIN AND SANITARY SEWER MAY ONLY BE INSTALLED IN THE SAME TRENCH WHERE BEDROCK IS PRESENT, AND AS APPROVED BY SPU
2) IF SANITARY SEWER IS NOT A MINIMUM OF 18" BELOW WATERMAIN, SANITARY SEWER SHALL BE WATERMAIN QUALITY
3) PAY LIMITS SHALL BE MEASURED FROM THE TOP OF SOLID BEDROCK AND EXTEND TO ONE FOOT ON EACH SIDE OF THE WATERMAIN PIPE, REGARDLESS OF DEPTH.

NOT TO SCALE

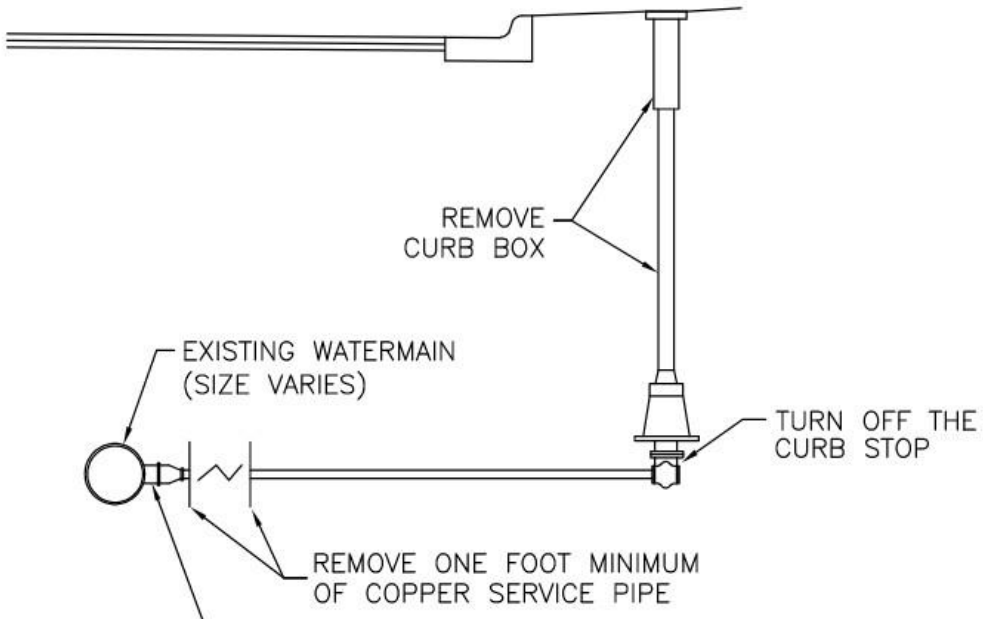
ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

JOINT TRENCH FOR WATERMAIN AND SANITARY SEWER

SPU Shakopee Public Utilities

WAT – 019

SHAKOPEE PUBLIC UTILITIES (SPU) WATER OPERATOR SHALL BE PRESENT WHEN RETIRING A WATER SERVICE LINE AND ALL MATERIALS MUST BE RETURNED TO SPU. CONTACT SPU WATER DEPARTMENT 24 HOURS BEFORE RETIRING LINE.



IF SERVICE HAS A SADDLE, DO NOT REMOVE THE SADDLE, EITHER

1) PLUG THE SADDLE AND REMOVE THE CORPORATION COCK
   –OR–
2) TURN OFF CORPORATION COCK AND INSTALL A DISC (COOKIE) IN CORPORATION COCK.

IF SERVICE DOES NOT HAVE A SADDLE

1) TURN OFF CORPORATION COCK AND INSTALL A DISC (COOKIE) IN CORPORATION COCK
   –OR–
2) REMOVE THE CORPORATION COCK FROM THE WATERMAIN AND INSTALL A PLUG INTO THE WATERMAIN

NOT TO SCALE

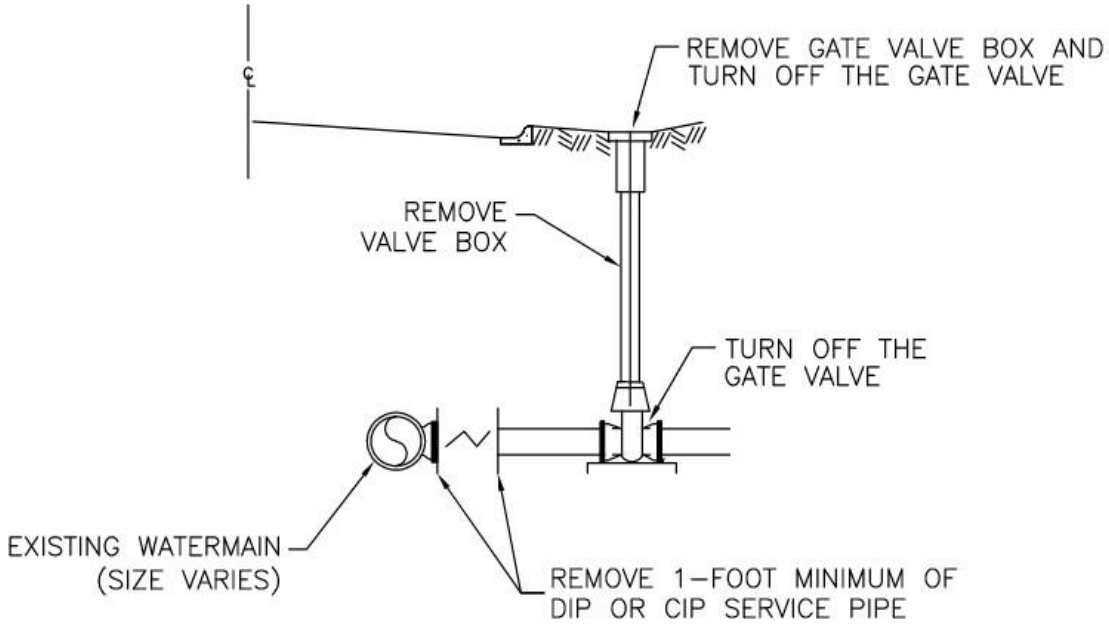
ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

RETIRE WATER SERVICE (FOR SIZES UP TO 1.5" COPPER SERVICES)

SPU Shakopee Public Utilities

WAT – 020

SHAKOPEE PUBLIC UTILITIES (SPU) WATER OPERATOR SHALL BE PRESENT WHEN RETIRING A WATER SERVICE LINE AND ALL MATERIALS MUST BE RETURNED TO SPU. CONTACT SPU WATER DEPARTMENT 24 HOURS BEFORE RETIRING LINE.



IF SERVICE IS A WET TAP, DO NOT REMOVE THE WET TAP AND SADDLE:

1) PLUG THE GATE VALVE AND MARK LOCATION WITH 4X4 OR OLD SERVICE
2) TURN OFF GATE VALVE
3) REMOVE GATE VALVE BOX

IF SERVICE IS NOT A WET TAP:

1) HAVE SPU WATER DEPARTMENT SHUT WATERMAIN OFF
2) REMOVE PIPE FROM SERVICE "T" AND REMOVE GATE VALVE AND GATE VALVE BOX
3) PLUG "T" WITH APPROPRIATE SIZE AT MAIN LINE CONNECTION
4) BEFORE BACKFILLING, TURN ON WATER TO CHECK FOR LEAKS WITNESSED BY SPU
5) MARK "T" WITH 4X4 OR OLD SERVICE PIPE

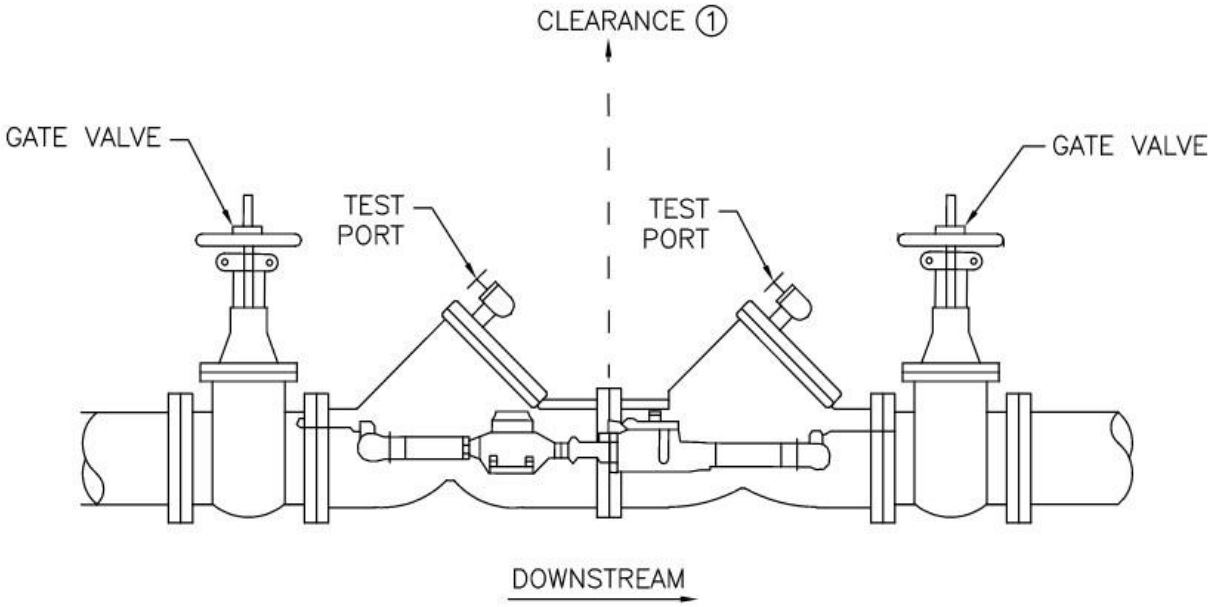
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

RETIRE DIP OR CIP WATER SERVICES (FOR 4" TO 16" DIP SERVICES)

SPU Shakopee Public Utilities

WAT – 021



TO BE IN COMPLIANCE WITH:
AWWA STANDARD C510

NOTE:
1) MUST PROVIDE A MINIMUM OF 12–INCHES CLEARANCE AROUND ALL SIDES OF THE DOUBLE CHECK AND 24–INCHES CLEARANCE ON THE SIDE CONTAINING THE TEST PORTS

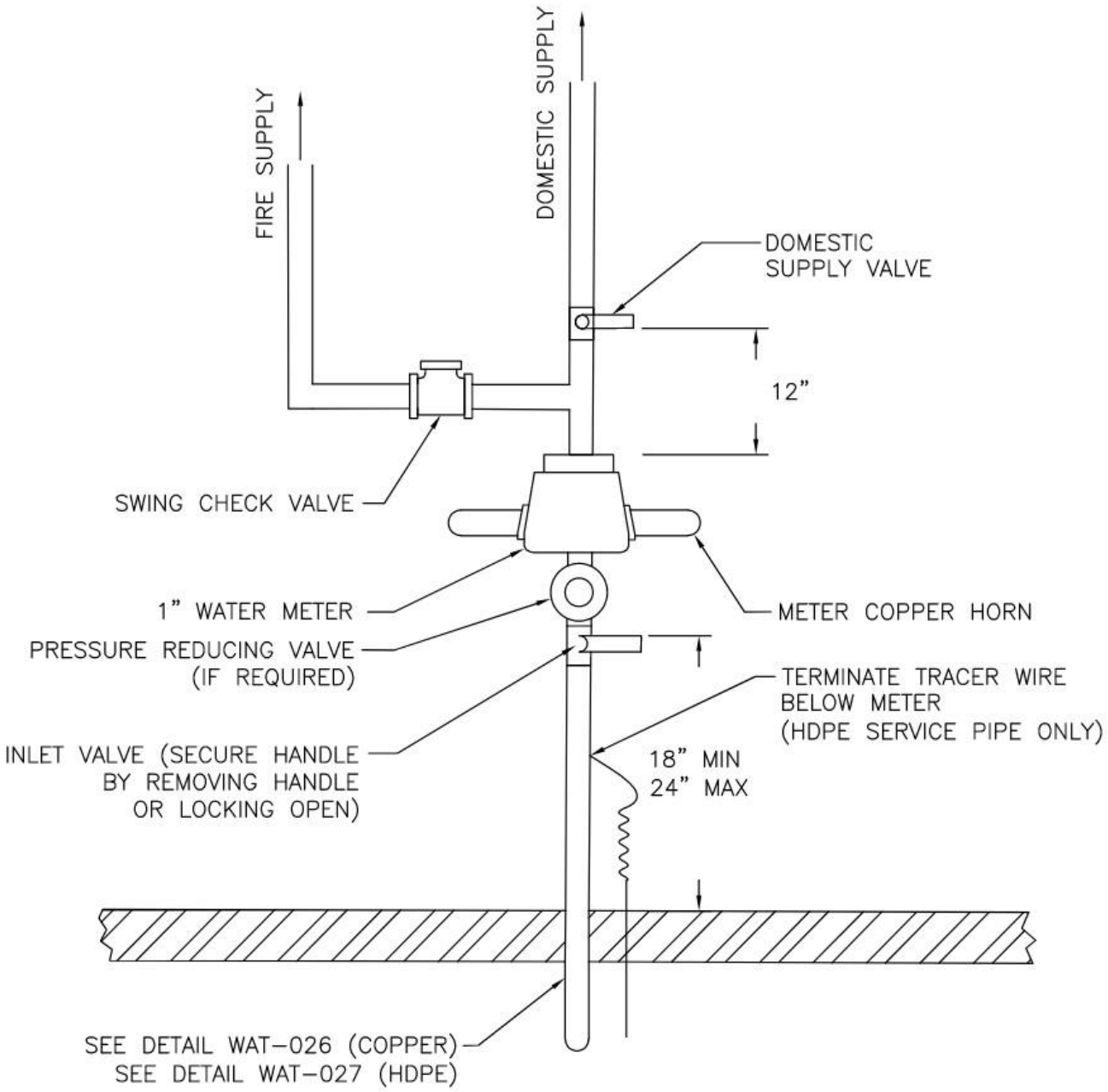
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

DOUBLE CHECK DETECTOR ASSEMBLIES

SPU Shakopee Public Utilities

WAT – 022



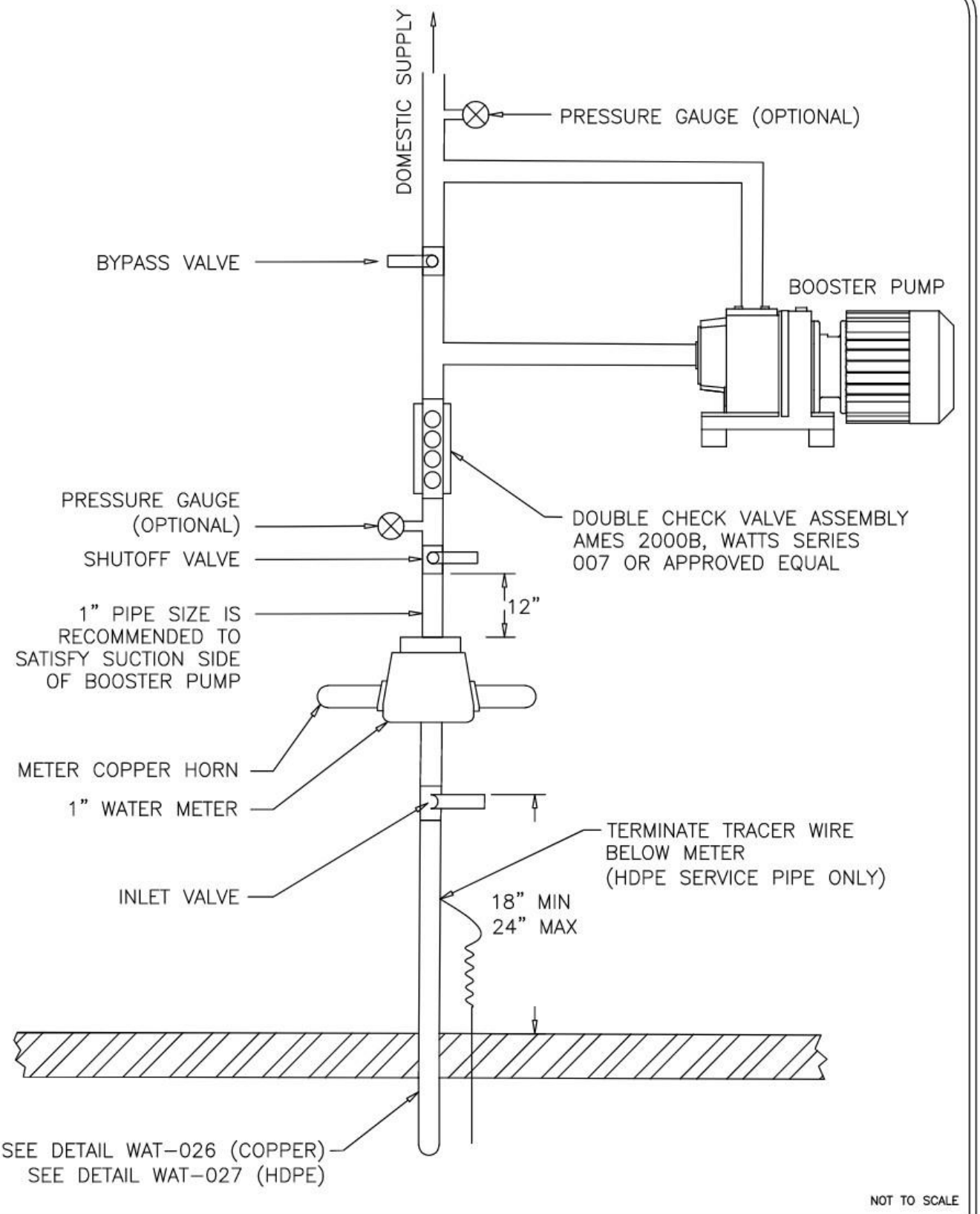
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

TYPICAL RESIDENTIAL INSTALLATION FOR SPRINKLED DWELLINGS

SPU Shakopee Public Utilities

WAT – 023



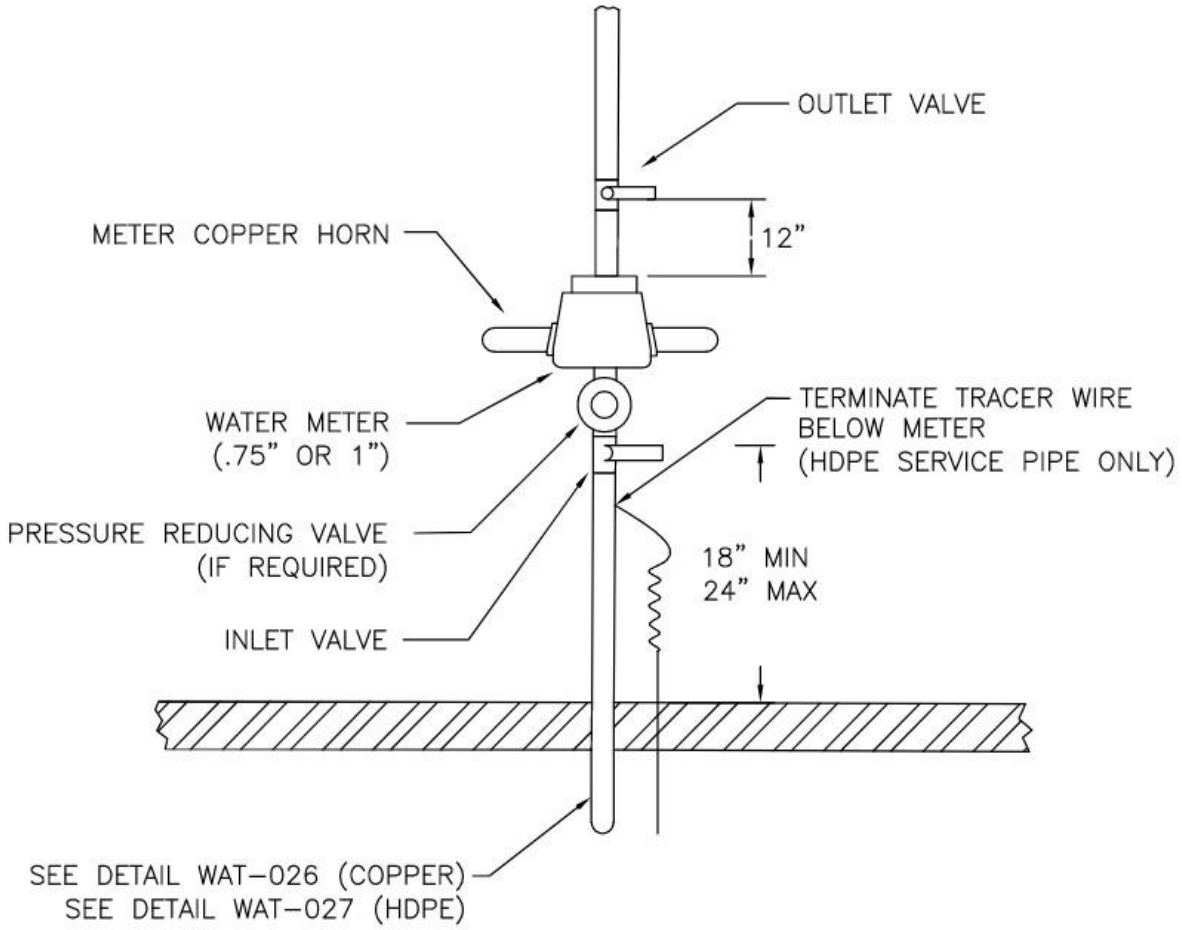
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

TYPICAL RESIDENTIAL INSTALLATION WITH BOOSTER PUMP

SPU Shakopee Public Utilities

WAT – 024



NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

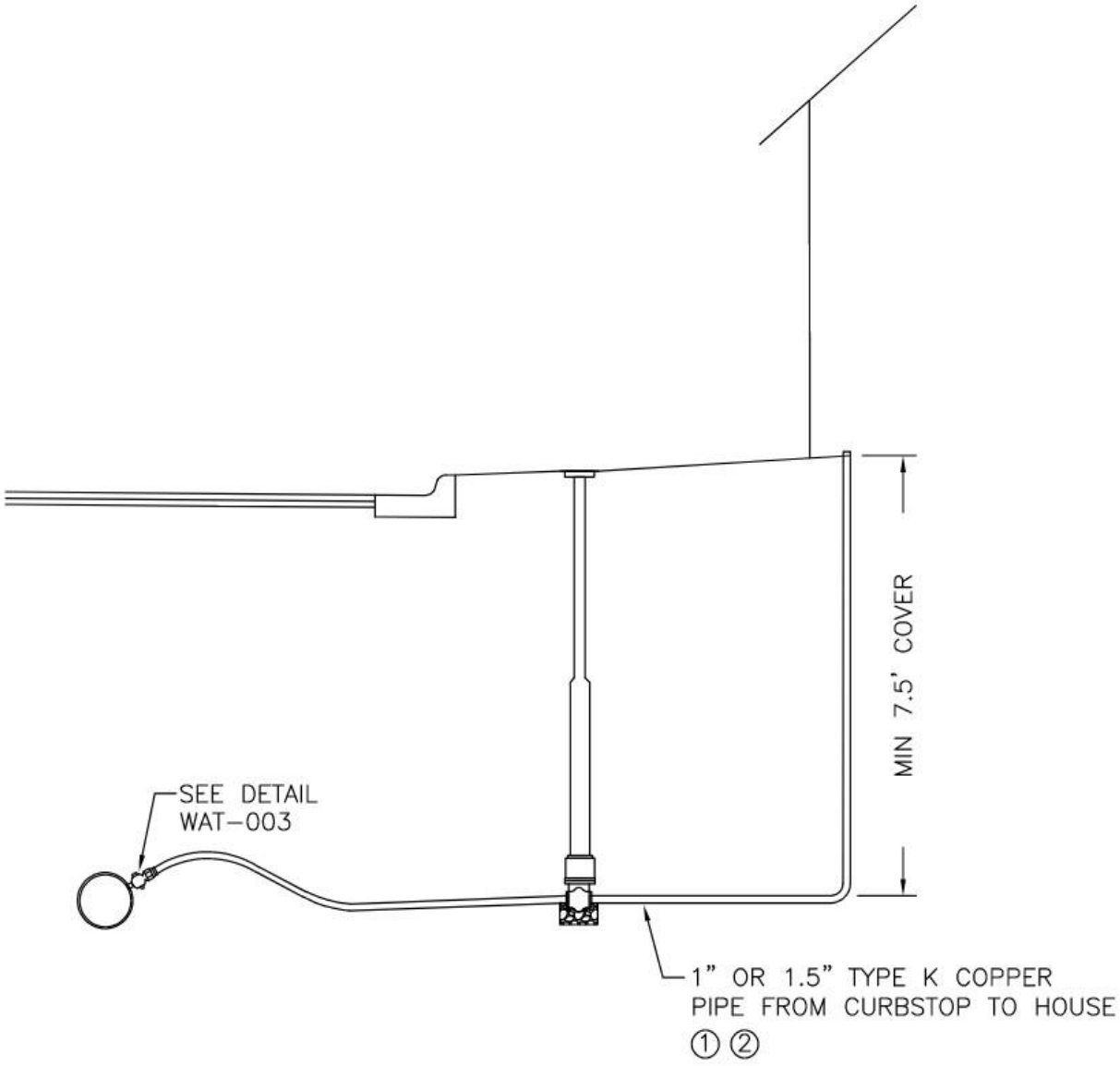
TYPICAL RESIDENTIAL WATER METER INSTALLATION

SPU Shakopee Public Utilities

WAT – 025

NOTE:

1) 1" TYPICAL INSTALL ON SINGLE FAMILY RESIDENCE
2) 1.5" TYPICAL INSTALL ON SINGLE FAMILY WITH RESIDENTIAL FIRE SPRINKLER SYSTEM



NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026-01		
1/5/26		

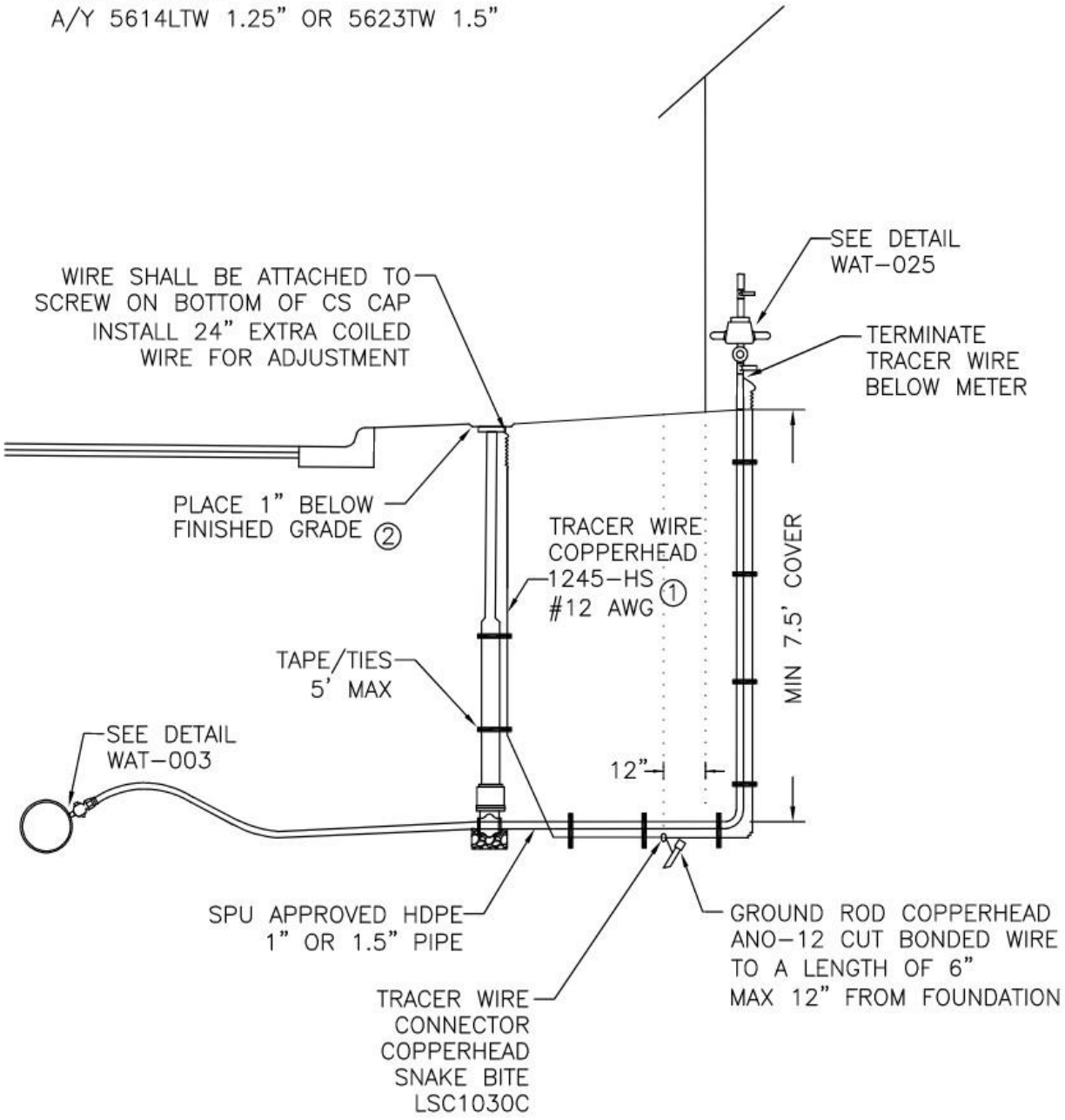
TYPICAL RESIDENTIAL WATER SERVICE CONNECTION WITH COPPER PIPE ONLY

SPU Shakopee Public Utilities

WAT – 026

NOTE:

1) WIRE (DRAWN AWAY FROM RISER FOR CLARITY) SHALL BE:
   INSTALLED ON THE BOTTOM SIDE OF THE PIPE BELOW SPRING LINE
   FASTEN TO THE PIPE WITH TAPE OR PLASTIC TIES @ 5' INTERVALS
   DO NOT FASTEN TRACER WIRE TO ADJUSTABLE UPPER STAND PIPE
2) CURBSTOP TOP SHALL BE:
   FORD FPLLIDTW 1.25"
   FORD FPXLIDTW 1.5"
   A/Y 5614LTW 1.25" OR 5623TW 1.5"



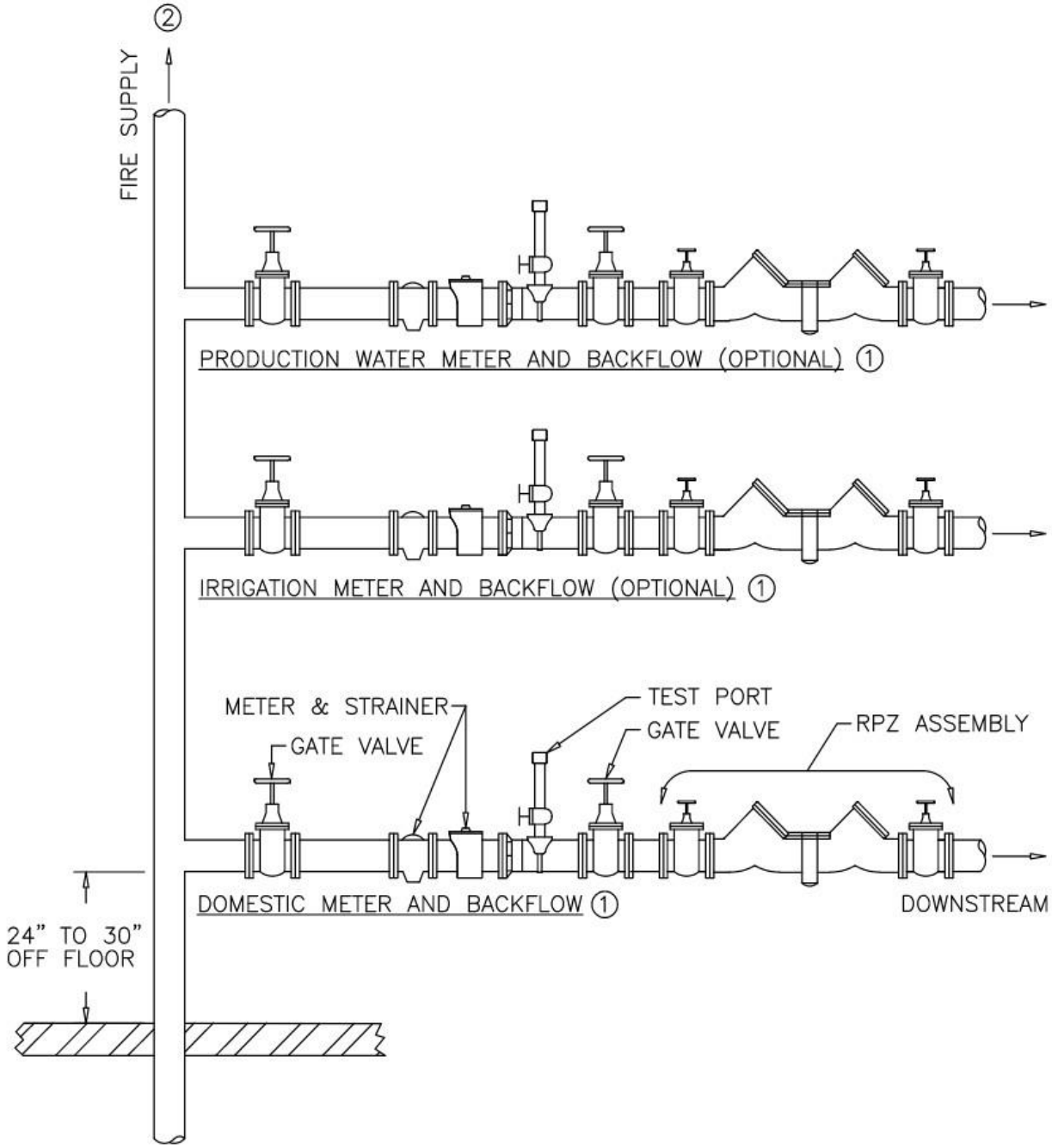
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

TYPICAL RESIDENTIAL WATER SERVICE CONNECTION WITH HDPE PIPE CURBSTOP TO BUILDING ONLY

SPU Shakopee Public Utilities

WAT – 027



NOTE:
1) SEE DETAIL WAT–011 FOR SPECIFIC DIMENSIONS AND INSTALLATION INSTRUCTIONS
2) COMBINED DOMESTIC AND FIRE SERVICE LINES SHALL BE INSTALLED IN ACCORDANCE WITH ALL BUILDING AND FIRE CODE, AND MAY REQUIRE AN ELECTRONIC ACTUATED SOLENOID VALVE.

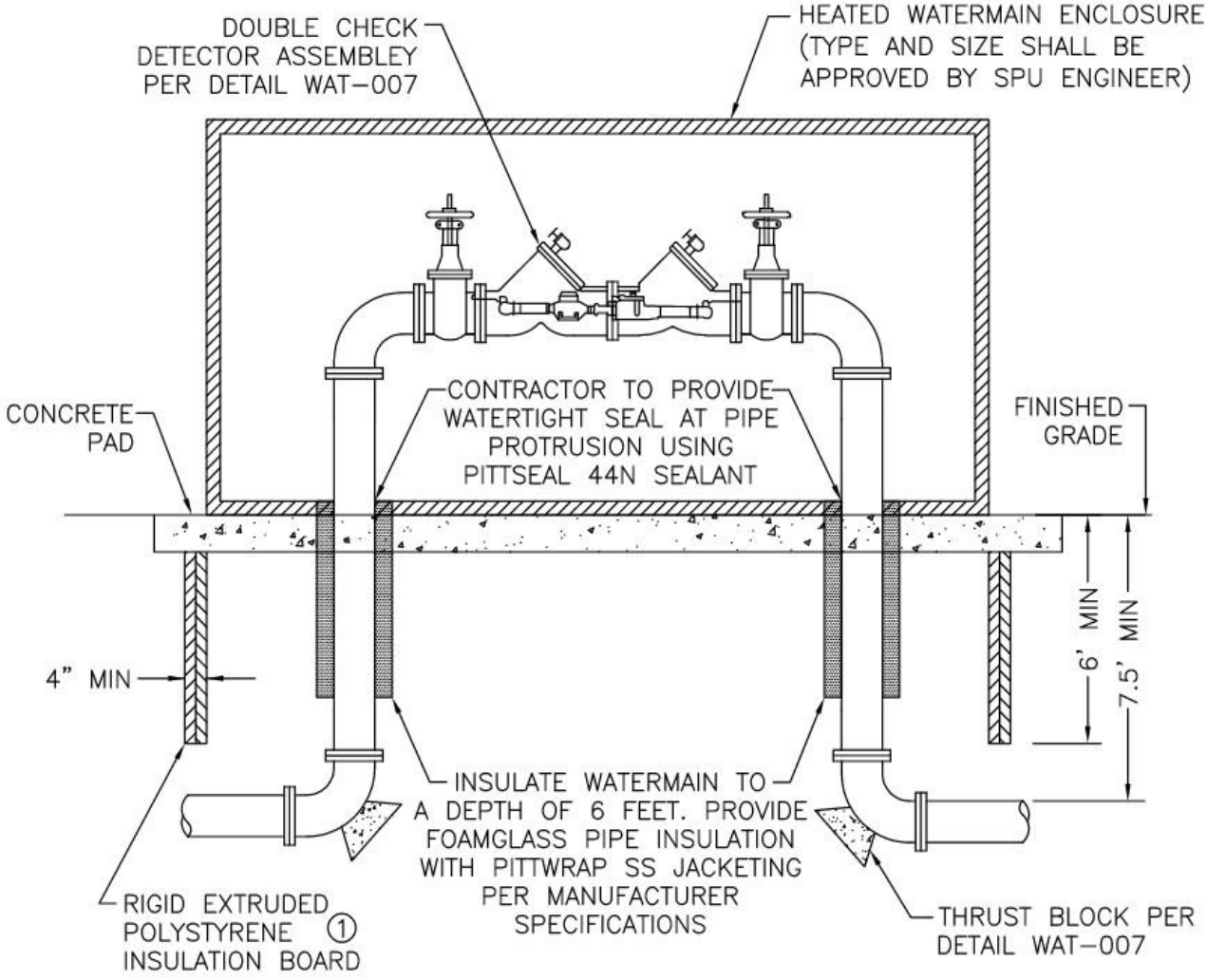
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

TYPICAL COMMERCIAL AND INDUSTRIAL BACKFLOW & METERS LAYOUT (DOMESTIC, IRRIGATION AND PRODUCTION)

SPU Shakopee Public Utilities

WAT – 028



NOTE:

1) HEATED ENCLOSURE SHALL MEET ALL ANSI ASSE 1060 REQUIREMENTS.
2) RIGID, EXTRUDED POLYSTYRENE, CLOSED CELL INSULATION BOARD, OR APPROVED EQUAL, SHALL FOLLOW THE PERIMETER OF THE WATERMAIN ENCLOSURE
   - A) EXTEND TO A DEPTH OF AT LEAST 6 FEET.
   - B) THERMAL RESISTANCE (R): 5.0
   - C) BOARD SIZE: 48" x 96"
   - D) WATER ABSORPTION PER ANSI/ASTM D284: 0.1% BY VOLUME MAX
   - E) EDGES SQUARE AND JOINTS IN POLYSTYRENE TO BE LAPPED

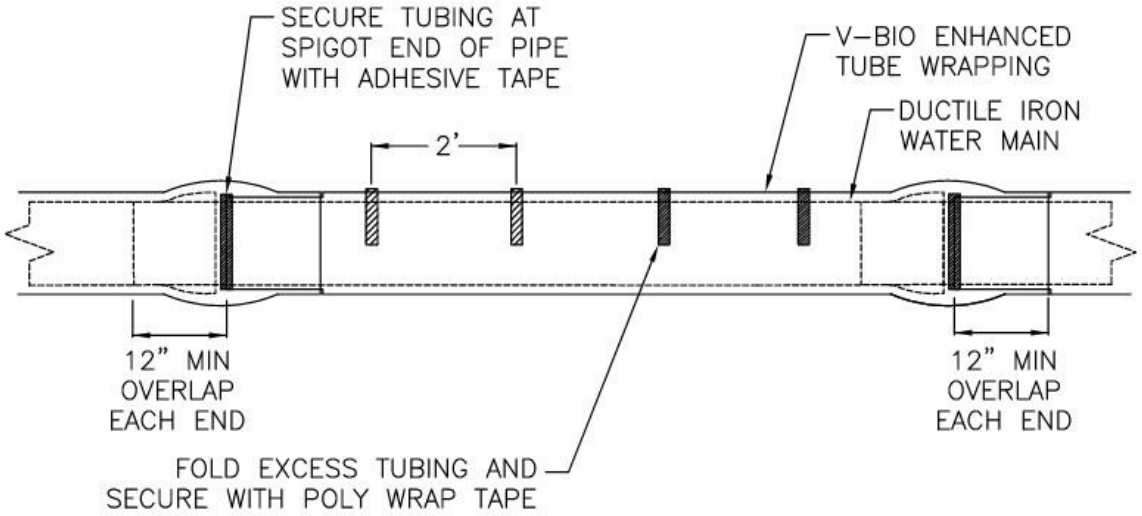
NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

DOUBLE CHECK INSTALLATION WITH HEATED ENCLOSURE

SPU Shakopee Public Utilities

WAT – 029



NOTE:

1) INSTALLATION OF V–BIO ENHANCED WRAP TUBING SHALL BE PER DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA) – MODIFIED METHOD A. THE POLYETHYLENE ENCASEMENT MUST MEET ALL THE REQUIREMENTS OF AMERICAN NATIONAL STANDARD INSTITUTE (ANSI) A21.5 (AWWA C105).
2) BACKFILL ACCORDING TO THE PROCEDURES FOUND IN THE AWWA C600 STANDARD FOR THE INSTALLATION OF DUCTILE IRON PIPE. TO PREVENT DAMAGE DURING BACKFILLING, ALLOW ADEQUATE SLACK IN THE TUBE AT THE JOINT. BACKFILL SHOULD BE FREE OF CINDERS, ROCKS, BOULDERS, NAILS, STICKS, OR OTHER DAMAGING MATERIALS. IF THE POLYETHYLENE IS BADLY DAMAGED, REPAIR THE AREA WITH A SHEET OF POLYETHYLENE AND SEAL THE EDGES OF THE REPAIR WITH ADHESIVE TAPE.
3) THIS STANDARD APPLIES TO ALL DUCTILE IRON PIPE INSTALLATION METHODS INCLUDING OPEN CUT, DIRECTIONAL DRILLING AND PLACEMENT IN A CASING.
4) FOR FITTINGS LIKE TEES AND BENDS, USE A FLAT SHEET OR A SPLIT LENGTH OF V–BIO TUBING. PASS THE SHEET UNDER THE FITTING AND OVER IT, THEN FOLD AND TAPE THE EDGES TO ENSURE A TIGHT, COMPLETE SEAL.
5) WHEN TAPPING SERVICES, WRAP TWO OR THREE LAYERS OF PLASTIC ADHESIVE TAPE COMPLETELY AROUND THE PIPE TO COVER THE AREA WHERE THE TAPPING MACHINE AND CHAIN WILL BE MOUNTED.

NOT TO SCALE

ADOPTED BY	REVISIONS	
RESOLUTION	DATE	BY
#2026–01		
1/5/26		

V–BIO ENHANCED POLYETHYLENE WRAP TUBING

SPU Shakopee Public Utilities

WAT – 030

APPENDIX A:

AMI METER EXCHANGE POLICY

The following policy was approved by the SPU Commission on November 3, 2025.

SPU's enhanced metering system upgrade, known as AMI (Advanced Metering Infrastructure), requires non-AMI metering equipment to be replaced with upgraded technology. All existing SPU electric services will have a meter with AMI technology installed, and all existing SPU water services will have an upgraded water meter and AMI communication module installed. New service addresses require AMI metering equipment installed before connection to SPU's system. Exceptions or modifications to this policy are noted below.

Opt-Outside – A customer may elect to have the AMI water meter communication module device installed outside the home/building on an exterior wall near the electric meter rather than inside the home. (Water meters must be installed inside a home/building in MN due to cold weather. The communication module, not the water meter, communicates with the electric meter using radio frequency.) If the Opt-Outside option is selected, the homeowner/property owner is responsible for any professional electric or construction expenses that may be incurred to get the proper wiring from the meter to the outside of the home/building. SPU will only connect the communication module/ERT to the wiring once it has been brought to the exterior wall and meets SPU criteria.

Meter Faraday Cages – Faraday cages may be installed by the homeowner to reduce or block minimal external electromagnetic fields generated from a transmitting AMI meter or communication module, provided the cage does not interfere with the automated data readings sent to SPU. The cost of the faraday cage and installation is the responsibility of the homeowner/property owner.

Remote Mounting - An electric AMI meter and water communication module may be mounted away from the home or building on a separate surface/pole located on the customer's property. This may require the customer to hire an electrician to underground the electric service and install the necessary 3-wire needed for the communications module. These costs are the responsibility of the homeowner/property owner.

Manual Read, Non-RF Communications – A residential customer may choose to have AMI metering equipment with non-radiofrequency (RF) communications installed at their home. In selecting this option, the customer will be required to cover the associated costs . These costs include a one-time setup fee for meter reprogramming (to non-RF), materials, travel, and installation costs. The setup fee applies to each non-RF electric and/or water meter installed. In addition, a monthly manual reading fee (covering both meters) will be applied to each monthly billing statement.

The monthly manual reading fee is in addition to the monthly Residential Service Charge. These fees become part of the customer account balance. Nonpayment of these fees is subject to SPU's disconnect policy. These fees may be adjusted annually based on published rates in SPU's fee schedule.

All metering equipment is owned by SPU. SPU has the right to access its equipment for purposes of maintenance, removal, exchange, reading, and/or repairs. See **Right to Access SPU-Owned Equipment Policy** for more information.

APPENDIX B:

Back Flow Prevention and Cross Connection Policy:

BACKFLOW PREVENTION

AND

CROSS-CONNECTION CONTROL

POLICY

TABLE OF CONTENTS

1. Purpose

1.1.1 To protect the public potable water supply for the City of Shakopee, Minnesota, operated by Shakopee Public Utilities (SPU) from the possibility of contamination or pollution. This is accomplished by isolating, within the owner's internal distribution system, such contaminants or pollution sources that otherwise could backflow or back-siphon into the public potable water supply.

1.1.2 To promote the prevention of cross-connections, actual or potential, between the Owner's potable water system and the public potable water supply for the City of Shakopee, Minnesota. This is being accomplished by containment protection after the water meter to any Commercial, industrial, or multifamily premises.

1.1.3 To provide for the maintenance of a continuing backflow prevention and a cross-connection control policy that will systematically and effectively prevent the contamination or pollution of the public potable water supply for the City of Shakopee, Minnesota.

1.2 Responsibility

1.2.1 SPU shall be responsible for the protection of the public potable water supply from contamination or pollution due to backflow or back-siphonage of contaminants or pollutants through the water service connection. If, in the judgment of SPU, an approved backflow preventer is required, notice in writing will be given to said Owner to install an approved backflow preventer at the water service entrance immediately downstream of the SPU-owned water meter on the premises at the Owner's expense. The Owner shall, within sixty (60) days, install such approved assembly or assemblies at their own expense, failure to, or refusal, or inability on the part of the Owner to install said assembly or assemblies within sixty (60) days, shall constitute grounds for discontinuing water service to the premises until such assembly or assemblies have been properly installed.

1.2.2 SPU will operate a Backflow Prevention and Cross-Connection Control Policy, to include the keeping of necessary records (see Section 6), which fulfills the requirements of the SPU Backflow Prevention and Cross-Connection Control Policy.

1.2.3 The Owner shall be responsible for ensuring the protection of the water system beyond the termination of SPU's public water system. This includes installing and maintaining all backflow preventer assemblies for containment and isolation purposes.

1.2.4 When SPU requires the public water supply to be protected by containment, the Owner shall provide the proper backflow prevention at the water service entrance to the premise/s immediately downstream of the SPU-owned water meter and shall be responsible for water quality beyond the outlet end of the backflow preventer assembly. The Owner shall utilize point-of-use protection as required by the City of Shakopee Building

Department.

1.3 Authority

1.3.1 The Federal Safe Drinking Water Act of 1974 SDWA, MN Water Supply Rule 4720.0025

1.3.2 SPU, the water purveyor having jurisdiction in charge of the public water system, is vested with authority and responsibility for the implementation of an effective Cross Connection Control and Backflow Prevention Policy and the enforcement of the provisions of this specification.

2. Definitions

The following definitions shall apply to this specification.

2.1 Terms

2.1.1 Approved: Accepted by SPU as meeting an applicable specification stated or cited in this regulation, or as suitable for the proposed use.

2.1.2 Approved: When used in reference to an air gap, pressure vacuum breaker assembly, a double check valve assembly, a reduced pressure principle backflow prevention assembly, or other backflow prevention assemblies, devices, or methods shall mean any such assembly, device, or method approved by The City of Shakopee Building Department.

2.2 Auxiliary Water Supply: Any water supply on or available to the premises other than SPU's water supply will be considered as an auxiliary water supply. These auxiliary waters may include water from another city's water utility or public potable water supply, or any natural source(s) such as a well, spring, river, stream, harbor, etc., or used water of industrial fluids. These waters may be contaminated or polluted, or they may be objectionable and constitute an unacceptable water source over which SPU does not have sanitary control.

2.3 Backflow: The flow of water or other liquids, mixtures, or substances, under

2.4 Backflow Preventer Assembly: A testable backflow prevention assembly, which inhibits backflow or back-siphonage into the public potable water supply. Most commonly categorized as a double check valve assembly (DCV), pressure vacuum breaker assembly (PVB), Spill Resistant vacuum breaker (SVB), or reduced pressure zone assembly (RPZ).

2.4.1 Air Gap: A physical separation between the free-flowing discharge end of a potable

water supply pipeline and an open and non-pressure receiving vessel.

2.4.2 Approved Air Gap: Shall be at least double the diameter of the supply pipe measured vertically above the flood rim of the fixture, but in no case less than 1".

2.4.3 Atmospheric Vacuum Breaker (AVB) (ASSE 1001): A device that performs similarly to a pressure vacuum breaker assembly. The AVB consists of a float check, a check seat, and an air inlet port. During normal flow conditions, the float within the AVB seals against the air inlet seat. When a back-siphonage condition develops, the cessation of normal flow permits the float to drop, thus opening the air inlet valve. If the float seals against a check seat, there is no back siphonage from the AVB body or downstream piping. However, if the float check is fouled, the air entering through the air inlet valve dissipates. An AVB shall not be installed where it will be in continuous operation for more than 12 hours.

2.4.4 Double Check Valve Backflow Prevention Assembly (DCV) (ASSE 1015): An assembly composed of two (2) independently acting approved check valves, including tightly closing resilient seated shutoff valves attached at each end of the assembly and fitted with properly located resilient seated test cocks. This assembly shall only be used to protect against a non-health hazard (i.e., pollutant).

2.4.5 Double Check Detector Fire Protection Backflow Prevention Assembly (DCDA) (ASSE1048): An assembly composed of two (2) independently acting approved check valves with a parallel detector assembly consisting of a water meter and a double check valve backflow prevention assembly, including tightly closing resilient seated shutoff valves attached at each end of the assembly and fitted with properly located resilient seated test cocks. This assembly shall only be used to protect against a non-health hazard (i.e., pollutant)

2.4.6 Pressure Vacuum Breaker (PVB) (ASSE 1020): An assembly that consists of an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve, with properly located resilient seated test cocks and tightly closing resilient seated shutoff valves attached at each end of the assembly.

2.4.7 Reduced Pressure Principle Backflow Prevention Assembly (RPZ) (ASSE 1013): An assembly containing two (2) independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and at the same time below the first checkvalve. The unit shall include properly located resilient seated test cocks and tightly closing resilient shutoff valves at each end of the assembly. This assembly is used to protect against a non-health (i.e., pollutant) or a health hazard (i.e., contaminant).

2.4.8 Spill-Resistant Vacuum Breaker (SVB) (ASSE 1056): A type of cross-connection control assembly which contains a check valve force – loaded closed and an air inlet vent valve force - loaded open to the atmosphere, positioned downstream of the check valve, and located between and including two (2) tightly closing shutoff valves and two (2) test cocks.

2.5 Backpressure: A condition in which the building plumbing system pressure is greater than the supplier's system pressure.

2.6 Back siphonage: The flow of water or other liquids, mixtures, or substances into the distribution pipes of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.

2.7 City of Shakopee Building Department: Authority Having Jurisdiction to enforce the Minnesota Plumbing Code.

2.8 City of Shakopee Fire Department: Authority Having Jurisdiction to enforce the Minnesota State Fire Code.

2.9 Containment: A method of backflow prevention that requires backflow prevention at the water service entrance to the premise(s) immediately downstream of the SPU-owned water meter

2.10 Contaminant: A substance that impairs the quality of the water to a degree that it creates a serious health hazard to the public, leading to poisoning or the spread of disease.

2.11 Cross Connection: Any connection between the public water supply and a source of contamination or pollution.

2.12 Isolation: A method of backflow prevention in which a backflow preventer is located at the source or "point of use" of the potential hazard to correct a cross-connection at a location within the owner's building or facility.

2.13 Owner: Any person, who has legal title to a property or a license to operate or inhabit a property.

2.14 Person: Any individual, partnership, company, public or private corporation, political subdivision or agency of the State Department, agency or instrumentality of the

United States, or any other legal entity.

2.15 Physical Disconnection: A physically measured separation of the water supply piping to eliminate the potential of a cross-connection between the public water system and an auxiliary water system. An installed backflow preventer assembly between the municipally supplied water system and an auxiliary water system does not meet the requirements of this document for a physical disconnection.

2.16 Pollutant: A foreign substance that, if introduced into the public water system, will degrade its quality, constituting a moderate hazard, or impair the usefulness or quality of the water to a degree that does not create an actual hazard to ~~the~~ public health, but that does adversely and unreasonably affect such water for domestic use.

2.17 Private fire protection water service: A water service line that is supplied by SPU, but is owned and maintained by the Owner, for the sole purpose of fire protection on the Owner's property. These services can serve fire suppression systems, private fire hydrants, or a combination of both.

2.18 Shakopee Public Utilities (SPU): Water purveyor for the City of Shakopee, Minnesota.

2.19 Water Service Entrance: The point in the Owner's water system beyond the sanitary control of SPU; generally considered to be the outlet end of the SPU-owned water meter and always before any unprotected branch.

2.20 Water System: The water system shall be considered as made of two (2) parts. The SPU public water system and the Owner's system.

3. REQUIREMENTS

3.1 SPU

3.1.1 For new Commercial, Industrial, Apartment, Multifamily (containing more than one unit and has a shared laundry facility), Institutional, and Dedicated Lawn Irrigation Service installations; a Reduced Pressure Zone (RPZ) shall be installed immediately downstream of the SPU-owned water meter regardless of the degree of hazard within the building (Containment). If a bypass line and meter are installed, an additional Reduced Pressure Zone (RPZ) shall be installed immediately downstream of the SPU-owned water meter on the bypass line.

3.1.2 For Commercial, Industrial, Apartment, Residential (containing more than one unit and has a shared laundry facility), Institutional, and service Installations existing prior to the

start of this program; SPU staff, or an SPU-designated representative, may evaluate the potential backflow into the public water system (Containment) and inform the Owner by letter of any corrective action deemed necessary, the method of achieving the correction and the time allowed for the correction to be made. Ordinarily, sixty (60) days will be allowed; however, this period may be shortened or lengthened depending on the degree of hazard involved.

3.1.3 Properties with an Auxiliary Water Supply.

3.1.3.1 Water pipes supplied by the SPU public water system must not be connected to any pump, well, or tank that is linked to an auxiliary water supply.

3.1.3.2 Single Family Residential- A physical disconnection of water supply piping between the interior potable plumbing and the non-potable auxiliary water system must exist when a residential property is utilizing an auxiliary water supply for outside watering purposes. A testable double-check valve must be installed immediately downstream of the SPU-owned water meter to protect the municipal water system from any potential cross-connection.

3.1.3.3 Commercial, Industrial, Residential (containing more than one unit with shared laundry facilities), and Institutional. A physical disconnection of the water supply piping between the municipally supplied water and the auxiliary water supply is required. A Reduced Pressure Zone (RPZ) shall be installed immediately downstream of the SPU owned water meter.

3.1.3.4 The Owner will be notified by mail of any cross-connection violation. The Owner will have sixty (60) days to correct the violation. If the violation has not been corrected after sixty (60) days, SPU may terminate water service to the premises. In the event the Owner informs SPU of extenuating circumstances as to why the correction of the violation has not been made, a time extension may be granted by SPU, but in no case will it exceed an additional thirty (30) days. If SPU determines at any time that a serious threat to public health exists, the water service may be terminated immediately.

3.1.4 For any Residential or Commercial irrigation system, a Pressure Vacuum Breaker (PVB) or Reduced Pressure Zone (RPZ) backflow preventer assembly shall be installed. Irrigation systems that are supplied by a dedicated water service line or are plumbed with an SPU-owned irrigation-only water meter must have an RPZ installed immediately downstream of the water meter. For a single-family residential irrigation system or a commercial irrigation system that is supplied after the SPU-owned domestic water meter, a PVB is an acceptable backflow prevention device.

3.1.5 Private fire water services and/or private fire hydrant service leads that are over the standard 20’ length may be required to be protected by a Double Check Valve Backflow Prevention Assembly (DCV). When required, the Double Check Valve Detector Assembly (DCDA) is to be located above ground in a heated structure that meets the requirements of

ASSE 1060 for access and testing purposes. SPU will make the determination when a Double Check Valve Detector Assembly (DCVA) is required on a private fire protection water service.

3.1.6 Fire suppression systems shall have a Double Check Valve Detector Assembly (DCDA) Backflow Prevention Assembly installed per the requirements of the Shakopee Fire Department, City of Shakopee Building Department, and SPU.

3.2 Owner

3.2.1 The Owner is responsible for the prevention and elimination of all cross-connections on their premises. SPU will assist the Owner with the identification of any cross-connection when requested.

3.2.2 The Owner, after having been informed by a letter from SPU, must at their expense, install, maintain, and test, or have tested, any backflow preventer assemblies on their premises.

3.2.3 The Owner must correct any malfunction of the backflow preventer assembly.

3.2.4 The Owner must not install a bypass around any backflow preventer assembly unless there is a backflow preventer assembly of the same type on the bypass. Owners who cannot shut down operations for testing of the backflow preventer assembly(s) must install an additional SPU-owned water meter and backflow preventer assembly as necessary to allow testing to take place.

3.2.5 The Owner must install backflow preventer assemblies in a manner approved by the City of Shakopee Building Department or SPU.

3.2.7 The Owner shall be responsible for the payment of all fees for permits, testing, repairs,and additional required retesting in cases where the backflow preventer assembly fails to operate correctly.

3.2.8 The Owner shall inform SPU and the City of Shakopee Building Department of any known, proposed, existing, or modified cross-connections.

3.2.9 The Owner is responsible for ensuring all points of use are protected with the proper backflow preventer assemblies per the City of Shakopee Building Department.

4. EXISTING BACKFLOW PREVENTER ASSEMBLIES

4.1 Any existing backflow preventer assembly shall be allowed to continue in service

until or unless the degree of hazard is such as to supersede the effectiveness of the present backflow preventer assembly or result in an unreasonable risk to public health. If the Owner of a premise wishes to remove an existing backflow preventer assembly from service, prior approval must be obtained from SPU and the City of Shakopee Building Department before doing so.

5. PERIODIC TESTING AND MAINTENANCE

5.1 All-new testable backflow preventer assemblies must be tested upon installation.

5.2 All testable backflow preventer assemblies, regardless of the install date, must be tested at intervals not to exceed twelve (12) months from the date of the previous test date by an American Society of Sanitary Engineers (ASSE) certified backflow preventer tester and shall be submitted to SPU, via The Compliance Engine, no more than thirty (30) days after the test date. Any backflow repair needs to be completed by a Licensed Plumber.

5.3 Any backflow preventer assembly that fails during a periodic test must be immediately repaired or replaced. Upon completion of the repair or replacement, the backflow preventer assembly must be retested at the owner's expense to ensure proper operation

5.4 SPU may require more frequent backflow preventer assembly testing in cases where there is a history of test failures or where SPU determines that, due to the degree of hazard involved, additional testing is warranted. The cost of the additional tests will be the responsibility of the Owner.

5.5 The State of Minnesota requires backflow preventer assemblies on all in-ground irrigation systems. The testing of all irrigation system backflow preventer devices must be completed each year, preferably at the time of the system start-up. This is due to the nature of the system being taken in/out of service to protect it from our local climate.

6. RECORDS AND REPORTS

6.1 Records: SPU staff or a representative of SPU will initiate and maintain a master database on all customer-owned containment backflow preventer assemblies and tests required by this program.

6.2 Private Records: SPU staff or a representative of SPU will initiate and maintain a master database on all Owner's testable private isolation "point of use" backflow preventer assemblies.

6.3 SPU utilizes The Compliance Engine to track backflow prevention reporting. It shall

be the responsibility of the backflow tester to enter the test reports and pay any associated fees with submitting the reports through their website www.thecomplianceengine.com. Any backflow test reports that are submitted directly to SPU or the City of Shakopee will not be accepted and will be considered delinquent until they are entered by the backflow tester into The Compliance Engine database.

7. Lockout Process

7.1 Residential irrigation Lock-outs can be enacted through two means. Firstly, at the request of the customer, to avoid the annual testing requirement. Secondly, SPU may issue a lock-out due to non-compliance. A tamper seal and lock-out tag will be affixed to the backflow preventer. While a system is under lockout, it must not be utilized. Moreover, to qualify for lock-out status, the system must be winterized. Lock-out requests must be made at:

https://shakopeepublicutilities.formstack.com/forms/irrigation_system_lockout_request

7.2 Removal of Backflow Lock-Out Tag: Only SPU is authorized to remove the tamper seal and lock-out tag. Any alteration or removal of these by unauthorized individuals will incur a non-refundable penalty of $250.00 charged to the owner's utility account. Unlock requests must be requested at:

https://shakopeepublicutilities.formstack.com/forms/irrigation_system_unlock_request

7.3 If a lockout of a backflow assembly cannot be performed for non-compliance, water may be shut off to the property.

8. Failure to Comply

8.1 Commercial and Industrial Customers

If an assembly is not tested within 30 days past the annual due date, it is considered delinquent. The Compliance Engine will send a deficiency notice to the owner approximately 45 days after the annual renewal date.

A penalty of $200.00 (per device) will be imposed if test results are not received within 30 days after the annual testing due date of the assembly. This penalty will continue until the assembly is tested and a passing test result is submitted.

Upon request by the customer, the testing penalty may be refunded with a successful test submission to The Compliance Engine within 60 days of receiving the penalty. Only one $200.00 (per device) penalty will be refunded per year.

If the backflow preventer test fails, the owner must repair and/or replace the device within 30 days

SPU may discontinue water service at any time if a backflow assembly is not tested or if a hazard exists to the municipal water system.

8.2 Residential Customers

If an assembly is not tested and submitted within 30 days past the due date, it is considered delinquent. A past due notice will be sent approximately 45 days after the due date to the contact on file within The Compliance Engine.

For delinquent accounts, a one-time, annual testing penalty of $150 will be imposed on the following month's billing statement if test results are not submitted (or submitted test results indicate a failed test) by the cut-off before the billing date (approximately ten days before the scheduled billing date).

If the backflow preventer test fails, the owner must repair and/or replace the device within 30 days of the failed test results and a successful test submitted. No additional testing penalties will be imposed.

At the same time, the owner's irrigation system will be in a lock-out status. Lock-outs will be conducted by SPU, with the majority being completed in the off-season. This will prevent irrigation water usage in the following season without proper testing.

Upon request by the customer, the testing penalty may be refunded with a successful test submission to The Compliance Engine within 60 days of receiving the penalty.

9. Degree of Hazard Table

TABLE 603.2
BACKFLOW PREVENTION DEVICES, ASSEMBLIES, AND METHODS

DEGREE OF HAZARD						
DEVICE, ASSEMBLY, OR METHOD[1]	APPLICABLE STANDARDS	POLLUTION (LOW HAZARD)		CONTAMINATION (HIGH HAZARD)		INSTALLATION[2,3]
		BACK-SIPHONAGE	BACK-PRESSURE	BACK-SIPHONAGE	BACK-PRESSURE	
Air gap	ASME A112.1.2	X	—	X	—	See Table 603.3.1 in this chapter.
Air gap fittings for use with plumbing fixtures, appliances and appurtenances	ASME A112.1.3	X	—	X	—	Air gap fitting is a device with an internal air gap and typical installation includes plumbing fixtures, appliances and appurtenances. The critical level shall not be installed below the flood level rim.
Atmospheric vacuum breaker (consists of a body, checking member and atmospheric port)	ASSE 1001 or CSA B64.1.1	X	—	X	—	Upright position. No valve downstream. Minimum of 6 inches or listed distance above all downstream piping and flood-level rim of receptor.[4,5]
Antisiphon fill valve (ballcocks) for gravity water closet flush tanks and urinal tanks	ASSE 1002 or CSA B125.3	X	—	X	—	Installation on gravity water closet flush tank and urinal tanks with the fill valve installed with the critical level not less than 1 inch above the opening of the overflow pipe.[4,5]
Vacuum breaker wall hydrants, hose bibbs, frost resistant, automatic draining type	ASSE 1019 or CSA B64.2.1.1	X	—	X	—	Installation includes wall hydrants and hose bibbs. Such devices are not for use under continuous pressure conditions (means of shutoff downstream of device is prohibited).[4,5]
Backflow preventer for Carbonated Beverage Dispensers (two independent check valves with a vent to the atmosphere)	ASSE 1022	X	—	—	—	Installation includes carbonated beverage machines or dispensers. These devices operate under intermittent or continuous pressure conditions.
Spill-Resistant Pressure Vacuum Breaker (single check valve with air inlet vent and means of field testing).	ASSE 1056	X	—	X	—	Upright position. Minimum of 12 inches or listed distance above all downstream piping and flood-level rim of receptor.[5]
Double Check Valve Backflow Prevention Assembly (two independent check valves and means of field testing)	ASSE 1015; AWWA C510; CSA B64.5 or CSA B64.5.1	X	X	—	—	Horizontal unless otherwise listed. Access and clearance shall be in accordance with the manufacturer's instructions, and not less than a 12 inch clearance at bottom for maintenance. May need platform/ladder for test and repair. Does not discharge water.
Double Check Detector Fire Protection Backflow Prevention Assembly (two independent check valves with a parallel detector assembly consisting of a water meter and a double check valve backflow prevention assembly and means of field testing)	ASSE 1048	X	X	—	—	Horizontal unless otherwise listed. Access and clearance shall be in accordance with the manufacturer's instructions, and not less than a 12 inch clearance at bottom for maintenance. May need platform/ladder for test and repair. Does not discharge water. Installation includes a fire protection system and is designed to operate under continuous pressure conditions.

TABLE 603.2
BACKFLOW PREVENTION DEVICES, ASSEMBLIES, AND METHODS (continued)

DEGREE OF HAZARD						
DEVICE, ASSEMBLY, OR METHOD[1]	APPLICABLE STANDARDS	POLLUTION (LOW HAZARD)		CONTAMINATION (HIGH HAZARD)		INSTALLATION[2,3]
		BACK-SIPHONAGE	BACK-PRESSURE	BACK-SIPHONAGE	BACK-PRESSURE	
Pressure Vacuum Breaker Backflow Prevention Assembly (loaded air inlet valve, internally loaded check valve and means of field testing)	ASSE 1020 or CSA B64.1.2	X	—	X	—	Upright position. May have valves downstream. Minimum of 12 inches above all downstream piping and flood-level rim of receptor. May discharge water.
Reduced Pressure Principle Backflow Prevention Assembly (two independently acting loaded check valves, a differential pressure relief valve and means of field testing)	ASSE 1013; AWWA C511; CSA B64.4 or CSA B64.4.1	X	X	X	X	Horizontal unless otherwise listed. Access and clearance shall be in accordance with the manufacturer's instructions, and not less than a 12 inch clearance at bottom for maintenance. May need platform/ladder for test and repair. May discharge water.
Reduced Pressure Detector Fire Protection Backflow Prevention Assembly (two independently acting loaded check valves, a differential pressure relief valve, with a parallel detector assembly consisting of a water meter and a reduced-pressure principle backflow prevention assembly, and means of field testing)	ASSE 1047	X	X	X	X	Horizontal unless otherwise listed. Access and clearance shall be in accordance with the manufacturer's instructions, and not less than a 12 inch clearance at bottom for maintenance. May need platform/ladder for test and repair. May discharge water. Installation includes a fire protection system and is designed to operate under continuous pressure conditions.

For SI units: 1 inch = 25.4 mm

Notes:

1 See description of devices and assemblies in this chapter.

2 Installation in pit or vault requires previous approval by the Authority Having Jurisdiction.

3 Refer to general and specific requirement for installation.

4 Not to be subjected to operating pressure for more than 12 hours in a 24 hour period.

5 For deck-mounted and equipment-mounted vacuum breaker, see Section 603.5.14.

APPENDIX C

Summary of

Developer Requirements for

Municipal Water Service

1. The developer shall submit a written request for municipal water service.

2. The developer shall submit for approval construction plans for a watermain distribution system designed in accordance with the Watermain Design Criteria adopted by the Utilities Commission. The developer shall include the engineer's estimate of the installed watermain cost.

3. The developer shall pay all Shakopee Public Utilities associated watermain plan review and construction inspection costs. The developer shall pay a cash deposit equal to 8.5% of the engineer's estimate of the installed watermain cost, prior to plan approval. The developer shall be responsible for all associated costs as described. If deposit is in excess of these costs, the amount will be returned at the end of the project.

4. The developer shall pay a Trunk Water Charge in accordance with the Trunk Water policy adopted by the Utilities Commission, prior to plan approval.

5.The developer shall install the watermain distribution system as approved by the Utilities Manager, within one (1) year of approval of plans.

6. The developer shall submit "as-built" record drawings of the completed watermain distribution system to Shakopee Public Utilities, within six (6) months of acceptance of the system.

APPENDIX D

Summary of

Property Owner Requirements for

Municipal Water Service

1. The property owner shall submit an Application for Service Line Installation.
2. If not previously paid or credited, the property owner shall pay a Trunk Water Charge in accordance with the Trunk Water policy adopted by the Utilities Commission, prior to plan approval.
3. The property owner shall pay the Water Connection Charge in accordance with the Water Connection Policy adopted by the Utilities Commission. The charge is to be paid at the time of connection to the system.
4. The property owner shall pay the associated water meter fee, when meter setting device is picked up at the Utilities.
5. The property owner shall adhere to all of the Customer Service policies as adopted by the Utilities Commission.

APPENDIX E

Summary of

Customer Requirements for

Municipal Water Service

1. The customer shall sign an Application for Utilities.
2. The customer shall pay a deposit equal to two months estimated usage charges, before service is provided.
3. The customer shall adhere to all of the Customer Service Policies as adopted by the Utilities Commission.